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NUTRITION AND APPETITE TRAINING DURING ILLNESS

Robert W. Keeton, M.D., Chicago

Studies of convalescence during World War II [1] brought out new information that was quickly applied to treatment and, in doing so, brought to physicians a new attitude toward their patients. Patients must recover from their illnesses, trauma, and surgical procedures in the shortest possible time. They must not be allowed to sustain pathological, biochemical, and physiological anomalies through omissions due to ignorance or neglect. They should present objective evidence of recovery and be returned to a productive life in society. Primary emphasis in the studies was placed on the contributions of adequate nutrition to the patient's recovery. It is the object of this paper to review this information as it is related to the practical problem of feeding the sick.

In the sick person there is rapid development of disturbances in metabolism, the magnitude of which varies with the nature of the illness, its duration, and the patient's ability to eat. The metabolic alterations follow the pattern of those seen in varying degrees of starvation. The accuracy of this concept was demonstrated in 1909 by Coleman and Shaffer [2] in their studies of patients with typhoid fever. By an estimation of caloric requirements, the proteins destroyed, and the application of the knowledge of metabolism, they were able to prevent loss of weight and protein in their patients. The mortality and morbidity dropped in the group of patients so treated. It is significant that this has remained the accepted method of treatment of typhoid fever for 40 years and only recently has been modified by the supplemental use of chloramphenicol. The management of other infectious diseases has followed this same pattern. Preservation of the patient's nutrition [3] has ameliorated the clinical course of the disease, but its cure has awaited the development of specific therapy or of individual immunity. The problem of feeding the sick may now be simplified by restatement. It is one of prevention of starvation. Illness may block the drive for food, prevent its ingestion, or accelerate the physiological and biochemical processes commonly operative in starvation.

PROTECTION OF BODY STRUCTURE

In general, the body is made up of living cells and the less immediately vital materials, such as interstitial fluids, fat, carbohydrate, and bone. Each compartment has its function, but these are adjusted to the primary one of preserving the living cells. Keys [4] has defined the term "active tissues" of the body as the difference between the body weight and the sum of the fat, the thiocyanate space, and the bone minerals (fig. 1). This comprised, during the control period of his experiments, 57% of the body weight of the young, healthy subjects submitted to semi-starvation. This category, as defined, would include the red cells and the essential lipids.[5] The essential lipids consist of the lipid components of the body structure, lipoproteins, phosphatides, cerebrosides, the myelin sheaths of nerves, and similar compounds.

The terms "cell mass"[6] and "lean body mass"[7] have been used by investigators who have approached the separation of the compartments by chemical analysis or isotope studies [8] of total body water (fig. 2). The term "active tissues" is a useful one, since it envisions the dynamic equilibrium in which proteins are maintained, and will be adopted for this discussion. The body fat [4] and extra body fat [5] include the lipids in the body depots and other locations that do not participate in the active metabolic processes but serve as a source of freely expendable energy. Starvation and illness cripple the body by reduction and destruction of the "active tissues." The rate of destruction depends on the deficit in energy and protein building stones. In total starvation the energy derived from carbohydrate in the body [9] is insufficient to meet the body's needs even for a single day. Energy must then be obtained from its stores of fat. In illness, the patient usually suffers from partial starvation due to lowered food intake and converts his body stores of fat into energy. A supplemental protective relationship between the fat in the food and the body was demonstrated in 1920, when high fat diets [10] were introduced in the treatment of diabetes. This method, considered

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Because of space limitations, the bibliographic references have been omitted from THE JOURNAL and will appear in the author's reprints.
Permission has been granted the author by the editors of the A. M. A. Archives of Internal Medicine and the Journal of the American Dietetic Association to reorganize and use some data previously published in their respective journals.

revolutionary at the time, was so successful that it was at once widely adopted. It remained for Woodyatt,[11] in 1921, to demonstrate the rationale for the success of these diets. When sufficient fat was added to the diet of an emaciated diabetic patient to meet his caloric deficit, both his nitrogen and glucose excretion were reduced. The reduction in glucose corresponded to the amount of protein that was currently being transformed into energy.

It can easily be seen that the physician must have some knowledge of the fat content of the body of his patient when his caloric intake is inadequate. Individual patients are commonly classified as being of standard weight, overweight, or underweight as judged by the height-weight-age-sex tables from the medicoactuarial mortality investigations. These weights have been determined statistically from a consideration of large samples of the general population. The term "ideal weight" has frequently been used by physicians and dietitians as interchangeable with standard weight. In using this term it is implied that the standard weight is an ideal one, an implication that is not entirely justifiable. To avoid confusion, the use of the term "standard weight" should be continued until a more comprehensive analysis of body structure has been made. Table 1 and figures 1 and 2, constructed from data in the literature, show the body fat of men and women of standard weight and those who are overweight (obesity) and underweight (semistarvation).

TABLE 1.—*Body Fat in Normal, Obese, and Undernourished Subjects*

Group No.	Sample: Sex	Sample: No. of Subjects	Sample: Average Age	Fat, % Body Weight	Weight: Relation to Standard	Weight: Description	Investigator
1	M	1	35	12	S − 11%	Normal	Mitchell and others [7]
2	M	32	25.5	14	S	Normal	Keys and others [4]
3	M	37	22.1	10	S ± 5%	Normal	Brozek, J., and Keys, A.: Science 112: 788, 1950
4 *	M	123	29	16	S + 4%	Normal	Behnke, A. R.: Federation Proc. 11 (no. 1, part 1): 11, 1952
5 †	M	..	29	12	S	Normal	Behnke (above)
6	M	7	34	15	S − 5%	Normal	McCance and Widdowson [6]
7	M	66	49.1	21	S ± 5%	Normal	Brozek and Keys (above)
8	F	5	29	19	S + 8%	Normal	McCance and Widdowson [6]
9	M	3	40	38	S + 80%	Obese	McCance and Widdowson [6]
10	F	6	35	43	S + 80%	Obese	McCance and Widdowson [6]
11	M	32	25.5	5	S − 22%	Semistarvation	Keys and others [4]
12	M	10	27	9	S − 15%	Semistarvation	McCance and Widdowson [6]

* Subjects selected from naval personnel. † Subjects selected from general population.

In group 1 (table 1) the data was obtained from a chemical analysis of the sample subject secured shortly after death. In the other subjects the computations were derived from determinations of specific gravity, total body water, extracellular water, and nitrogen displaced from the fat of subjects exposed to 100% oxygen, and were based on certain acceptable assumptions. It will be noted that young men of standard weight in apparent good health have fat reserves of 12 to 15%, women of the same age 20%, and men of middle age (average age, 49) 21%. The obese men and women studied had reserves of 38% or more, depending on the degree of obesity. Undernourished subjects who have been submitted to semistarvation have fat reserves of 5 to 9%. When the reserve fat is excluded, the remaining tissues, which have been designated as the metabolic core, have a more uniform percentage structure and appear to establish the body's requirements for energy.

Metabolically, obesity begins and increases when a person ingests calories in excess of his requirements and stores these as fat. Clinically, obesity is recognized in patients who are 15% or more above their standard weight, unless they are unusually muscular or bony. Biochemically, it is defined as the presence of fat reserves in excess of 20% of the standard body weight. The fat reserves of men of standard weight will not protect them against a 50% caloric deficit.[12] In the Minnesota experiment,[4] the subjects lost 26% of their "active tissues," despite the use of 71% of body fat for energy. The loss in "active tissues" appeared to be geared to the decreasing metabolic rate. With decreasing body weight, the percentage rate of loss of fat remained unchanged, which suggests that the fat was freely expendable as long as it was available. In the Carnegie experiment,[12b] although the conditions were not as severe, significant losses in body weight and nitrogen occurred. In obese patients submitted to prolonged and severe semistarvation, receiving the basal caloric requirement minus 30% for as long as 52 weeks, the basal metabolic rate [13] did not decline to a subnormal level.

The nitrogen minimum, or wear and tear nitrogen, represents amino acids that have not found a synthetic home in the normal dynamic exchanges between the protein compartments of plasma, cells, and reserves. Deuel and co-workers [14] speak of this nitrogen as derived from the deposit or reserve protein. It is determined experimentally by measuring the nitrogen excretion in the urine of a normal subject who has been fed calories in excess of his requirements and a diet theoretically free of protein. The values vary from 2.2 gm.[15] to 1.7 gm.[14] The quantity is so small and the method of measuring it such as to preclude the assumption that it is derived from protein used for energy (fig. 3). The obese patient,[16] on a diet of basal caloric requirement plus 50% of this and less than 2 gm. of nitrogen, showed an average nitrogen minimum in the urine between the 7th and 15th days of 2.81 gm. (range 3.37 to 2.24 gm.). When fed the basal requirement minus 30% and 2 gm. of nitrogen, she showed a nitrogen minimum of less than 2 gm. (range 1.48 to 1.53 gm.) between the 28th and 44th days of the experiment. When she was fed no protein and the

basal requirement minus 61.5% (598 calories), the nitrogen minimum diminished to 4 gm. by the third day, which is of the same order as is shown in other experiments. This indicated that her fat reserves had replaced the dietary fat that protected the body proteins in the experiment using normal subjects. This conclusion has

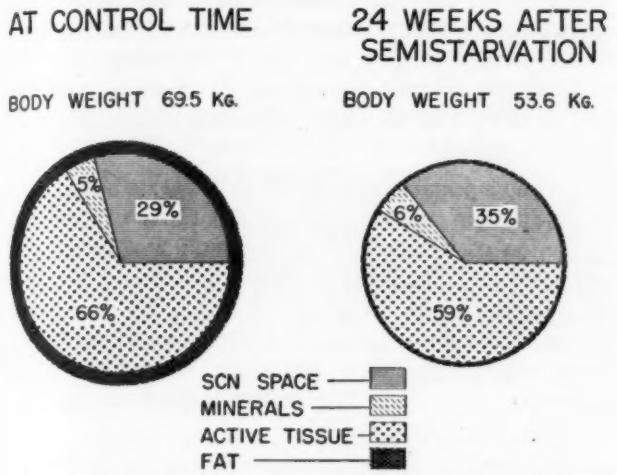

Fig. 1.—Body compartments as determined by Keys,[4] illustrated according to the plan of Behnke.[5b] ("SCN space" refers to thiocyanate space.)

been substantiated by other workers,[17] who have fed obese patients diets well below their caloric requirements for prolonged periods without injury.

In considering the dietary requirements of the sick, the physician should think in terms of the degree of obesity of the patient and his quantity of expendable fat reserve. Patients with extreme obesity are able to withstand caloric deficits of 50%, those with moderate obesity 25%, and those with a standard weight no significant deficits.

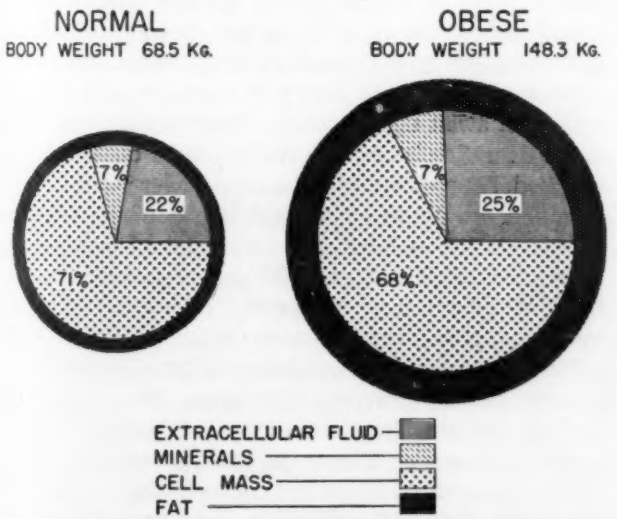

Fig. 2.—Body compartments as determined by McCance and Widdowson,[6] illustrated according to the plan of Behnke.[5b]

CALORIC REQUIREMENTS OF THE SICK

There are many factors that modify the caloric requirements of a patient. It is well first to compute his basal requirements and to assume that his metabolic machinery is functioning normally. Additional allowances can then be made for factors introduced by his illness. For each degree rise in temperature his basal requirements should be increased 7.2%, for restlessness and other forms of activity 30 to 50%, for cough 5%, and for specific dynamic action of food 10%. The average male patient with a basal requirement of 1,700 calories would require 2,800 to 3,000 calories daily to protect his body during illness due to a severe infection.

REPLETION OF BODY STRUCTURE

The physician often has the task of reconstituting the "active tissues" of patients who are convalescing from prolonged illnesses or operative procedures. Protein metabolism can be disrupted by a quantitative lack of building stones or energy required for the construction of the protein molecules. It can also be disrupted by qualitative failures in its intermediary synthesizing mechanisms. In correcting the quantitative defects, it is of primary importance to have an understanding of the physiological interrelationships between the dietary levels of protein and of other foods required for energy.

In a well-controlled study of protein-depleted young rats [18] it was shown that a reduction of caloric intake below a critical level restricted the utilization of protein

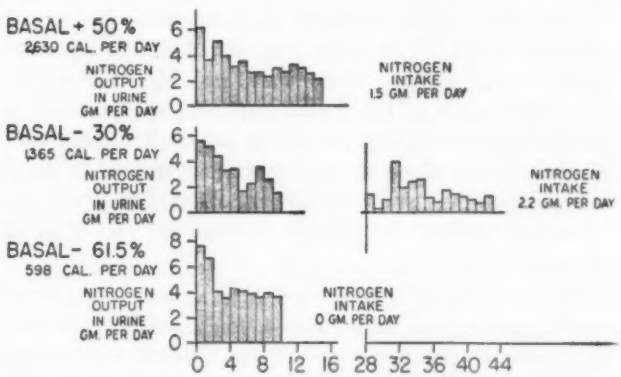
BASAL + 50%
2630 CAL. PER DAY
NITROGEN OUTPUT IN URINE GM. PER DAY
NITROGEN INTAKE 15 GM. PER DAY
BASAL - 30%
1365 CAL. PER DAY
NITROGEN INTAKE 2.2 GM. PER DAY
BASAL - 61.5%
598 CAL. PER DAY
NITROGEN INTAKE 0 GM. PER DAY
0 4 8 12 16 28 32 36 40 44

Fig. 3.—Nitrogen minimum in obese patients as influenced by high and low caloric diets.[20] ("Basal" refers to basal caloric requirements.)

for the fabrication of tissue. The critical caloric level embraced the energy necessary for maintenance, storage, tissue synthesis, and waste. Feeding of extra calories above the critical level does not augment the rate of utilization of a given quantity of protein. It leads to a deposition of fat. When extra protein was fed and the caloric intake was maintained at a constant level above the critical level, the synthesis of protein was accelerated. The processes of repletion and growth seemed to be similar, and it was inferred that the fabrication of a kilogram of tissue in a protein-depleted animal and in a growing animal demanded similar quantities of structural material and energy. By a review of data available in the literature, this group found [19] that protein requirements for rapid repletion of protein tissues in the average-sized man ranged between 2 and 4 gm. per kilogram of body weight, provided a critical level of calories was furnished.

In the Minnesota experiment,[4] high caloric intake did not facilitate an increase of "active tissue." It led to an increase in body fat. The "active tissues" were reconstituted after 58 weeks. Supplements of 20 gm. of protein daily did not facilitate their recovery. This delay in the repletion of body proteins would seem, from a practical viewpoint, to be longer than is desirable. Larger supple-

ments in protein are now customarily advocated, since a storage of nitrogen must occur before protein can be fabricated. Convalescence can hardly be regarded as attained until the compartments of body proteins have been replenished.

Disease, trauma, and operative procedures appear to disturb the intermediary synthesizing mechanisms. This is shown by the difficulty in preventing the occurrence of negative nitrogen balance in the presence of infectious diseases [20] and after operative procedures and trauma,[21] despite the ingestion of large quantities of protein and calories. It was further noted that if the patient or animal had been previously starved or had lived on a low protein diet [22] these losses were minimized. These findings were attributed either to increased catabolism [23] or to anabolic failure.[20]

Madden and Whipple [24] indicate that the amino acids of food are synthesized in the liver and elsewhere into plasma proteins. They also support protein formation throughout the body, including that for reserve against adversity. The supply of amino acids from outside the body and the demand for protein materials within the body are in a constant state of balance with the protein reserve stores, "a dynamic equilibrium." By dietary administration of isotopic amino acids it has been shown [25] that plasma proteins and proteins of liver, kidney, and intestinal tract take part in the metabolic reactions of protein synthesis at the same rate. In the rat,[26] all the plasma albumin and fibrinogen and 80% of the plasma globulin are formed in the liver. The tissue proteins and 20% of the plasma globulin are formd by the nonhepatic tissues.

Dietary protein may enter the metabolic protein pool and be allocated in the ratio of 1 gm. to serum albumin [27] to 30 gm. to the other proteins of the body. It may be converted into glucose (gluconeogenesis) or fatty acids and be used immediately for energy or stored as fat for periods of adversity. The effects of disease and trauma that Selye [28] characterizes as stress alter significantly the paths of disposal of the dietary protein. Thus injections of testosterone propionate and chorionic gonadotropin [29] exert a somatotropic effect and increase the body stores of protein in normal and eunuchoid persons. They may cause growth in height and weight of the underdeveloped boy. In Cushing's disease,[30] the somatic fabrication of protein appears to be held in abeyance by a conversion of protein to glucose. This was in part correctable by injections of testosterone propionate. The daily administration of a crude alkaline extract of ox anterior pituitary lobe,[31] which was doubtless rich in somatotropic hormone, to rats with fractures prevented the loss of body weight and excessive excretion of nitrogen and creatine, which is the normal result of such an injury. Extension of these and related studies [32] led to the concept that alterations in protein metabolism after injury are due to the activity of the adrenal gland. It was postulated that the adrenal gland produces an "N" (nitrogen) anabolic hormone and an "S" (sugar) or antianabolic hormone. Normally these are balanced, but after trauma there is decreased excretion of "N" hormone and increased excretion of "S" hormone. This would lead to decreased fabrication of protein and increased conversion of the dietary protein into metabolites that supply energy. The validity of this concept has been confirmed and extended by Selye,[33] who considers that in stress there is a shift in the anterior lobe pituitary hormone production, with a greater production of corticotropin at the expense of the somatotropic (STH) and gonadotropic (GTH) hormones. By the injection of somatotropic hormone the growth inhibiting and catabolic actions of stress occasioned by multiple abscesses, produced by subcutaneous turpentine injections in rats, were abolished.

It is now possible to consider that disease and trauma inhibit protein repletion and the reparative processes by reduction of somatotropic hormone [34] and increase of corticotropin. The latter, leads to an excessive secretion of hydrocortisone. When the severity of the disease process has subsided and the normal excretion of pituitary trophic hormones has been reestablished, the starvation incident to disease and trauma can be satisfactorily corrected by diet.

The clinician is accustomed to look on the serum protein level as an index of the state of his patient's protein metabolism. Disease, trauma, and the accompanying semistarvation lead to an increase in extracellular (thiocyanate space) and intracellular water; hence, the lowered protein level may be due in part to dilution. The serum protein level will rise as the demands of the tissues for proteins are proportionately satisfied.[27] Injections of testosterone facilitate the restoration of tissue proteins. They may actually lower the serum protein level by diverting amino acids from their synthesis to the tissues.

The low serum protein level of patients with severe liver damage is corrected with greater difficulty. The hepatic cells fabricate all the serum albumin and fibrinogen and 80% of the serum globulin. When these cells have been specifically damaged, serum protein fabrication must await their recovery; however, their capacity for regeneration is large, provided proper conditions are supplied. Patients with cirrhosis of the liver [35] have severe inanition, owing to inadequate intake of protein and calories. When such patients were fed the basal requirement plus 100%, 181 to 300 gm. of protein, and 33 mEq. of sodium, there was prompt retention of nitrogen and loss of potassium, indicating that the potassium brine within the starved cells was being replaced by new tissue protein. During this period of severe inanition in the cirrhotic patient, the plasma cannot be confined to the vascular channels. Plasma given intravenously passes into the interstitial fluids and expands their volume by attracting additional water from the circulating blood. The net result is a gain in body weight and an increase in edema. These patients usually are able to eat sufficient food to satisfy the body's demand for energy. If an increased supply of amino acids is furnished by a high protein diet or by intravenous injections of amino acid, which contain negligible quantities of salt, the reconstitution of the proteins of the vascular cells will be hastened. It is well recognized that the liver is capable of

rapid regeneration after injury. This is doubtless due to the high concentration of amino acids, which are received directly from the intestinal tract, and the specific enzyme systems available for the fabrication of protein.

In certain surgical situations the plasma protein level is often low, but the vascular cells are competent. Even if the patient is unable to take adequate oral feedings, intravenous injections of plasma will restore plasma proteins temporarily until they can be regenerated. If the patient has associated anemia, the plasma should be supplemented with whole blood, since the protein and porphyrin of the hemoglobin are less chemically active [25] than plasma proteins in the competition for amino acids. If the patient can take sufficient calories from other foods to meet his energy requirements, the repeated use of plasma can replenish his proteins. If the patient is not able to take orally adequate quantities of either protein or calories but must rely entirely on parenteral alimentation, practical methods for prolonged protection of his nutrition are not now generally available. Reports of experimental studies [36] have shown that nutrition can be supported and protein depletion corrected by intravenous administration of a dextrose amino acid solution to which emulsions of fat have been added. Intravenous injections of amino acid mixtures have been commonly used to protect protein metabolism of patients unable to eat satisfactorily. Elman [37] has pointed out that the amino acids lessen the negative nitrogen balance attained with the use of glucose solutions alone and that some patients are maintained temporarily in nitrogen balance. In the latter case, the energy deficit is presumably met from the stores of body fat. It has recently been emphasized [38] that their usefulness is limited, since they are unable to protect the patient's protein stores because of their caloric inadequacy.

HUNGER DRIVE

Hunger is associated with rhythmic tonic contractions of the stomach, which often reach a tetanic peak.[39] These appear in the newborn [40] at birth and recur after feedings as the stomach empties. They persist after vagotomy,[39b] though diminished in intensity, and are augmented by stimuli from the central nervous system induced by insulin hypoglycemia.[41] After vagotomy and alcohol block of the splanchnic nerves in rats,[42] the hunger drive is maintained in undiminished strength. Hunger contractions persist in starvation,[43] but the sensations of hunger diminish after the first few days. This may in part be due to the regurgitation of duodenal contents [44]; when this occurs gastric contractions are reduced or abolished. Hunger in some form normally persists as long as life is maintained. After total gastrectomy a patient [45] did not feel hunger pangs such as he had formerly experienced, but he did have a lively desire for food and experienced an emptiness in the abdomen. It is generally accepted that normally the effective stimulus for hunger is the gastric hunger contraction. The absence of these contractions or the blocking of the neural impulses from them does not rob the person of the desire for food, and their presence does not insure that he will experience such a desire. They cannot therefore be regarded as an obligatory stimulus for the hunger drive.

Two anencephalitic children [46] accepted and swallowed sweet solutions but rejected sour and bitter ones. The decerebrated pigeon [47] becomes restless and walks about his cage when his crop is empty. When it is filled he quiets down and remains immobile. These and other studies indicate that the reflex centers concerned in the acquisition of food are subcortical in location. Hetherington and Ranson [48] found that symmetrically placed electrolytic lesions in, or ventrolateral to, the ventromedial nucleus of the hypothalamus of cats, and later of rats, were followed by obesity. In man obesity often follows neoplastic or infectious diseases involving either the diencephalon or its near neighbor, the hypophysis.[49] The obesity in rats was due primarily to increased food intake, a condition designated as hyperphagia.[50] Following successful placing of lesions in the hypothalamus, the rat may increase his body weight by 15% within 24 hours. If the food is not removed from the cage he may choke to death on it before he recovers from the anesthetic. When allowed to eat to satisfaction the animal consumed much larger quantities of food than his control litter mate and gained proportionately more weight. For convenience, this center will be spoken of as the hyperphagic center. The behavior of the animals operated on with respect to their food was abnormal. They habitually showed extreme hunger; "they did not eat their food but rather attacked and devoured it." Wheatley [51] found that cats treated in this way "ate hurriedly or wolfed their food while normal cats given the same diet ate slowly, frequently taking several hours to consume their allowance."

A "feeding center" situated in the extreme lateral portion of the lateral hypothalamus at the same rostrocaudal level as the ventromedial nucleus has been described by Anand and Brobeck.[52] Bilateral electrolytic destruction of this area completely inhibited food intake and the rats died of starvation. After unilateral destruction the animal ate normally. It seems probable that of the two centers described the feeding center exerts the more basic control over food intake and that its activity is regulated by the hyperphagic center. These two centers with their reflex projections constitute the primitive mechanism for the acquisition of food. Their activity initiates and directs the motor responses that constitute the hunger drive. The hunger drive begins to function at birth and becomes integrated with other hypothalamic mechanisms that control defense, attack, and emotional states. It becomes progressively more effective and, if uninhibited, more savage in the pursuit of food.

APPETITE

Modifications of the hunger drive are produced by various forms of reflex conditioning in which the cerebrum primarily participates. For the purposes of distinction and analysis of factors involved one may now define appetite as resulting from modification of the behavior of the hypothalamic hunger drive by cerebral activity. The cerebrum may inhibit the vigor and savagery with which food is sought, attacked, and devoured. Training in table etiquette and the social amenities of life under the guidance of parents is largely responsible for soften-

ing this aspect of hunger in children. The cerebrum may modify the character and the composition of food. Hunger has been regarded as due to biological tension,[42] which in early postnatal life drives the organism to activity. By trial and error this activity results in the acquisition of food, which relieves the tension. On repetition, facilitation and conditioning organizes the reflexes teleologically. At this stage the tension is relieved only by foods as biochemically defined or by bulky substances that simulate food.[47] Psychiatrists have taught that the hypothalamic biochemical definition of food has been extended widely by the cerebrum. They point out that the nursing of the child is a complex ritualistic ceremony. The fondling, petting, and singing of lullabies by the mother come to be food as realistically as the milk which trickles into the child's throat. The child's tension for food cannot be relieved by breast milk alone. The tension for emotional gratification will remain unsatisfied. With his growth, education, and social contacts, the ritualistic content of the food required for emotional gratification becomes widely extended to objects and relationships, which to the casual observer are not related to food but which are so related in the patient's mind. Medicine is indebted to psychiatry for the classification and clarification of these extensions to the ancillary fringe components of food.

The physiological mechanism for the acquisition of food is in a dynamic equilibrium with that for its rejection (vomiting). Normally, it is prepotent, but as it is inhibited it loses its potency and is replaced by the mechanism for its rejection. The vomiting mechanism is constantly in such a state of active preparedness that a minimal elevation of the irritability of the center by the application of a dilute solution of apomorphine [53] discharges it. The steps leading to the rejection of food are described by the patient as lack of interest in food, lack of hunger, anorexia, nausea, and vomiting. The afferent fields from which stimuli reach the vomiting center are widely scattered. Biologically, the mechanism is organized as a protective device against noxious agents. Its employment may serve effectively as a psychological protest against deprivation of the ancillary components of food. If these are denied to the patient, the mechanism for the rejection of food becomes prepotent, and the biochemical foods are rejected. From this point it becomes a general weapon of protest against situations that may be buried in the patient's psyche. When such extensions go unrecognized and the hidden problem remains unsolved, the patient deteriorates into the clinical state of "anorexia nervosa."

There are three ways by which the appetite may be improved: strengthening by physiological means the afferent impulses from the somatic fields (gastrointestinal tract, muscles); replacing by psychotherapy the cerebral inhibitory impulses with more potent cerebral augmentive impulses; or abolishing the inhibitory impulses. This would mean an exploration and resolution of the patient's ancillary food problem. Psychoanalytic or related psychiatric methods may be required if the patient has an immature personality and is incapable of self-analysis. A patient with a mature personality may be able to solve his own problems when he is convinced that they are of emotional origin.

Long and his associates [54] successfully trained normal rats to become hyperphagic to the extent that they ate two to three normal rations per day and gained corresponding amounts of weight. The rat normally makes excursions by day from his hiding places for the collection of food. This is eaten peacefully at night under the protective cloak of darkness. Caged rats follow the same pattern of eating at night. The cerebrum has inhibited daytime eating in the interests of safety. The training program consisted of the removal of the day's ration from the cages at selected short intervals after it was offered to the rat. By degrees, the rat ate voraciously additional daily rations as they were offered later. When he weighed the factor of safety against that of "no food" he chose to eat and ignore the element of danger. This plan of appetite training in rats was so successful and rested on such secure physiological and psychological grounds that it was decided in 1945 to apply it to patients. Selected cases [55] that illustrate the principles discussed above will be described. No attempt will be made to give accumulated data.

PLAN OF APPETITE TRAINING

Patients without gastrointestinal disease were used in appetite training studies. With a few, the program was started with one meal a day at 8 a.m. To the others two meals were served, one at 8 a.m. and the other at 4 p.m. The patients often complained of hunger around 4 p.m. Eating at this time should take advantage of a period of gastric tetany, as described by Carlson,[39b] or hypoglycemia,[56] to which an intensification of hunger is attributed.

On initiation of the appetite training program, the physician and the dietitian stressed to the patient the importance of eating all the food served. Additional food was added only when the patient had eaten all food served. These additions were made to each meal as they were accepted and until the food intake was sufficient to establish satisfactory weight gain. The character of the meals often was changed from day to day, but replacements of uneaten food on the same day were not allowed. When the program was well instituted, a third small feeding at 10 p.m. was used in making the transition to three meals a day. An attempt was made at all times to have the meals adequate in vitamins and minerals, even though at the beginning they were deficient in calories. In this program the patients are the recipients of considerable incidental psychotherapy in that they are consulted as to their choice of food and are encouraged to look on the program as a game in which the physician and dietitian lay wagers with the patient as to the quantity of food he can eat.

Studies of two patients in whom there was no psychological resistance to recovery will be described first. One had cryptogenic fever and the other was an edentulous woman who had a nontoxic goiter. These will be followed by studies of two patients in whom psychiatric factors were large. Their correction was necessary before the treatment of the patients was considered complete.

REPORT OF CASES

CASE 1 (*Cryptogenic Fever*).—The cause of this patient's elevated temperature was not determined. A diagnosis of Hodgkin's disease was entertained but not confirmed. He was in the hospital 198 days on a general diet and continued to lose weight. He was then changed to the appetite training program and gained 13 lb. (5.9 kg.) in the next 56 days (table 2). It is astonishing that he soon could eat in one meal per day as much or more (1,753 calories) than he had previously eaten during the entire day. When he was placed on the two meals per day regimen, he was gradually able to follow the pattern set by the rats and eat two rations per day, thus doubling his caloric intake. On his discharge from the hospital he appeared to be in good health. No drug had been found that had any specific curative effect. It was the opinion of other members of the staff that his recovery was attributable to the restoration of normal nutrition and the development of an immunity to the infective agent.

CASE 2 (*Edentulous Patient with Nontoxic Nodular Goiter*).—It is not widely appreciated among physicians that a patient from whom all teeth have been extracted may lose an extraordinarily large amount of weight. The loss of 100 lb. (45.4 kg.) in this patient combined with the presence of a nodular goiter led to a clinical diagnosis of a toxic goiter. On final analysis it was found that hyperthyroidism was absent and that the weight loss was due to the handicap of faulty mastication and the loss of appetite. After the patient had been eating one meal per day for five days and had doubled her intake of food she was placed on two meals per day (fig. 4). In the succeeding five days she increased her food intake by one third, up to 2,900 calories. She then requested that she be returned to three meals a day and indicated that she would have no further trouble in eating. On three meals per day she gained 12 lb. (5.4 kg.) in 26 days and consumed between 3,000 and 3,460 calories daily. At this point she was returned to two meals per day to determine whether she could continue to eat at this rate. From Oct. 10 through Oct. 30 she ate 3,500 calories daily divided into two meals and gained an additional 8.5 lb. (3.8 kg.). It is evident that the distribution of the food into three meals did not increase her capacity to eat.

TABLE 2.—*Response of Patient with Cryptogenic Fever to Appetite Training*

Meal Regimen	Date	Weight, Lb.	No. of Calories	Clinical State
Ward diet	8/22/45	172	Unknown	Variable temperature, peak 104 F
	10/ 4/45	150		
One meal	10/ 4/45	150	719	Occasional temperature, spike
	10/13/45	151	1,753	
	10/14/45	151	2,369	
Two meals	10/24/45	154	3,328	Temperature 99—98.6 F
	11/30/45	163	3,328	

CASE 3 (*Reactive Depression and Anorexia Nervosa*).—This patient entered the psychiatric outpatient dispensary, where a diagnosis of a reactive depression and anorexia nervosa was made. He was severely emaciated and was found on physical examination to have a nodular goiter and an auricular fibrillation. He was transferred to the medical service for study, which showed that he had arteriosclerotic heart disease, auricular fibrillation, and a nontoxic nodular goiter. His depression was due to an incident that occurred at the time of his mother's death. The incident could not be reversed, and his mental recovery would depend on his ability to adjust himself to it. In an attempt to replace his mother, he married. The marriage was unsuccessful, and he had bouts of vomiting, which reduced his weight to 100 lb. (45.4 kg.). The vomiting constituted his protest against his emotional injury. It seemed that this patient would be an excellent subject for a trial of the efficacy of the appetite training program. He had continued to vomit regularly for a month after his entrance into the hospital. During this time he was on a quantitative diet consisting of three meals per day but ate inadequately as shown by his stationary weight. The striking improvement in his weight gain after he was placed on two meals per day is shown in figure 5. About two weeks later his bouts of vomiting ceased. He was given no specific psychiatric treatment other than the interest manifested by the staff in his progress. He had recovered completely from his depression on his discharge from the medical service. His recovery was to be attributed to three factors: (*a*) restoration of his nutrition with the consequent sense of well-being; (*b*) the opportunity of associating with the staff and other patients who were in normal mental health; and (*c*) the sympathetic encouragement of his associates. The sympathy in his case was a most important therapeutic agent, because he entered the hospital with a feeling that he had been rejected by his family and loved ones.

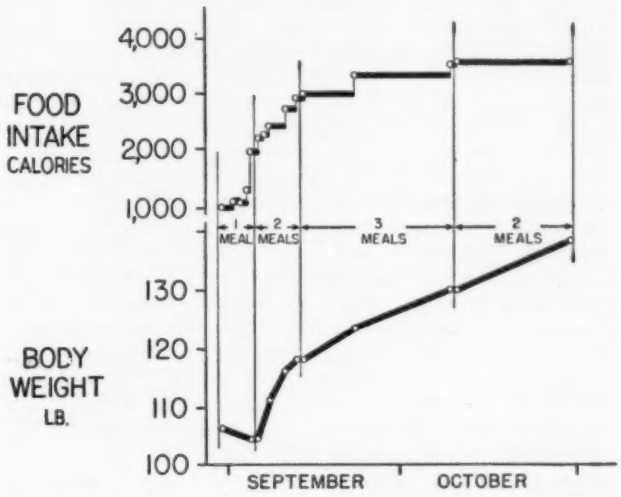

Fig. 4.—Relation of weight changes to diet regimen in edentulous patient with nontoxic nodular goiter.[56]

CASE 4 (*Metabolic Bankruptcy with Anorexia Nervosa*).—This patient entered the hospital in a state of metabolic bankruptcy, weighing 53 lb. (24 kg.). She showed the syndrome seen in patients with pituitary deficiency, which in turn was attributed to her state of starvation. Time and space does not permit a discussion of the details of her clinical state. She resisted all the conventional dietary attempts to establish a gain in weight, and tube feeding was instituted. The tube feeding was used when the patient became uncooperative in eating or was found secretly disposing of uneaten food. Its use maintained her nutrition and acted as a coercive psychotherapeutic measure. It cannot be denied that it was also punitive in character, and therefore a rather crude form of psychotherapy; however, it relieved the

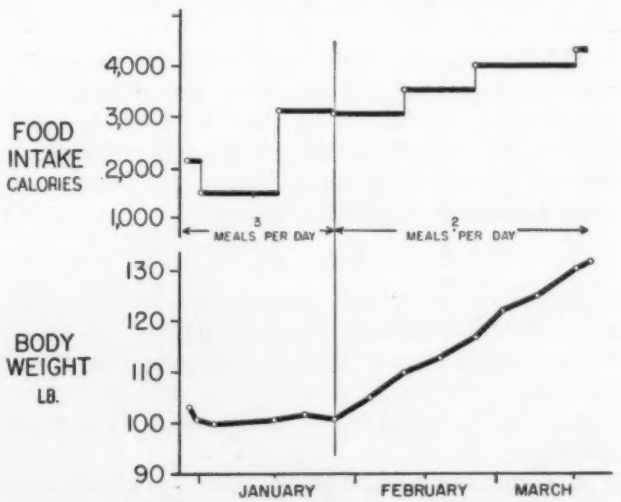

Fig. 5.—Weight changes in patient with reactive depression and anorexia nervosa submitted to appetite training.

patient of the responsibility of expressing her resentment through vomiting. It was not curative, since it had to be used repeatedly over a five month period. During this time, the patient was seen regularly by the psychiatrists but resisted all attempts at analysis. She was judged to be mentally incapable of accepting even simple discussions of her problems. After six months, her weight had increased from 53 to 86.5 lb. (24 to 39.2 kg.), but she still remained uncooperative. The results of the appetite training program are shown in figure 6. After this program was instituted the patient's unresolved conflict was discovered by accident. Her home conditions were bad. She loved her mother dearly, but she was the only one of 10 children remaining at home and was assigned all the dirty work and unpleasant chores. She also worked as a maid for a neighbor to supplement the family income and often was beaten physically by her drunken father. During all this time she secretly dreamed that in some way she would earn enough money to become a lawyer and be able to correct injustice in the world. One day she looked unusually forlorn, and one of the nurses who was going to the beauty parlor took her along. After receiving a manicure, a facial, and a new coiffure, she returned a different girl. She had now decided that she would give up the legal profession and become a beautician. Shortly after this she requested that she be returned to a general diet. She ate three meals a day, continued to gain weight, and went home to take training in a school for beauticians. This patient illustrates the third method by which the appetite can be improved. She accidently discovered the solution for the problem buried in her psyche.

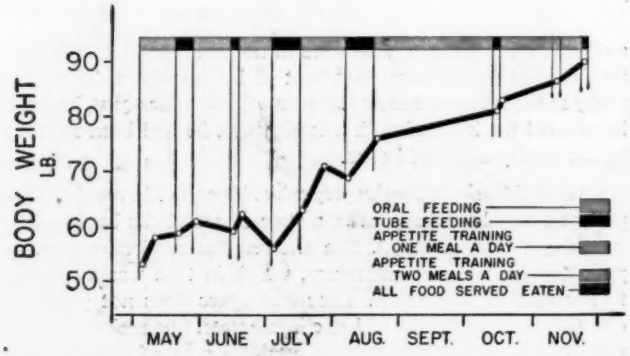

Fig. 6.—Weight changes in patient with anorexia nervosa subjected to coercive psychotherapy (tube feeding) and appetite training.

This last case should demonstrate that a common sense approach to mental problems often proves effective in specific episodes. The analytic exploration and reorganization of the patient's personality is a curative approach that may have to be adopted if the patient presents too many episodes of emotional misbehavior.

SUMMARY

Studies in convalescence have widened our knowledge of the anomalies produced by disease and have increased the physician's responsibility for treatment. The anomalies are largely due to semistarvation and can be prevented and corrected by the maintenance of adequate nutrition.

A quantitative estimate of the patient's caloric requirements should be made. These must be balanced by the food ingested plus the expendable fat of the body, if the "active tissues" (lean body mass) are to be conserved. Repletion of "active tissues" and growth require comparable amounts of protein-building foods and energy. There is evidence to show that in patients with disease or trauma the pituitary gland reduces the excretion of somatotropic and gonadotropic hormones and increases that of corticotropin. This would reduce protein synthesis and convert the amino acids to metabolites useful for energy.

The hunger drive designed for feeding is a function of the hypothalamus, the activity of which is mediated through the feeding and hyperphagic centers. It is modified largely by inhibitory cerebral reflexes. These inhibitions may become so intense as to replace the feeding mechanism with one designed for the rejection of food (vomiting).

The biochemical component of food in the newborn becomes integrated at the time of nursing with many ritualistic cerebral additions required for emotional gratification. This ancillary emotional fringe is inseparably bound to the biochemical components. The person's tension for food demands both biochemical and emotional gratification; otherwise he has not been fed.

A plan for appetite training is described and its effectiveness illustrated in cases with and without psychiatric components. At the physiological level, the plan takes advantage of bouts of gastric tetany and relative hypoglycemia. At the psychological level, it substitutes augmentive for inhibitory reflexes and thus makes use of psychotherapy. At the psychiatric level, it points out the necessity for the resolution of the patient's problem before its inhibitory influence on the feeding mechanism can be overcome. This may require the use of psychoanalytic and related psychiatric methods of treatment. In no other way can permanent restoration of the appetite and nutrition be accomplished in patients with anorexia nervosa.

8 S. Michigan Ave. (3).

Rehabilitation of the Disabled Housewife.—Housewifery is certainly the largest "industry" in the country, and probably the most important, since a happy and well-run home is a prerequisite for the health and efficiency of school children and industrial workers. Yet, in contrast to the progress made in the vocational training and resettlement of the handicapped child and industrial worker, very little has been done to help the disabled housewife to resume her activities.

Medical rehabilitation to restore physical and mental function so far as possible is available to the housewife, as to other patients, in the hospital departments of physical medicine; but when permanent disability is unavoidable, the disabled housewife is relieved of her responsibilities by the provision of home helps, "meals on wheels," the removal of young children to residential nurseries, and often by another female member of the family giving up her employment in order to help in the home. This somewhat defeatist approach to the problem is anomalous in times when rehabilitation and resettlement in all other fields are directed to training disabled persons to undertake work within their residual physical and mental capacity, so that, with the assistance of any necessary special tools and appliances, they are able to hold their own with the physically capable. . . .

Nevertheless it has been shown . . . that with suitable training and modification of domestic appliances the majority of disabled housewives can resume their work. This tends to improve the morale not only of the patients themselves but of the whole household; it saves the expense of supplementary aid, and retains in productive work women who would otherwise have to help in the home. The misery experienced by the disabled housewife sitting inactive at home while paid help or relatives do her work, and the strain on husbands and other wage-earners in the family, are too well known to need description. Clearly as much attention should be paid to this subject as to other aspects of rehabilitation.—F. S. Cooksey, Rehabilitation of the Disabled Housewife, *Annals of Physical Medicine*, October, 1952.

PRESENT-DAY CHOLECYSTOGRAPHY

B. R. Kirklin, M.D.
and
D. Brendan O'Donnell, M.D., Rochester, Minn.

Through 27 years of outstanding service, cholecystography has been a familiar and efficient feature of radiological diagnosis, and it is hard to realize that before the advent of this method radiological examination of the gallbladder consisted only of attempts to demonstrate a primary shadow of the gallbladder or of gallstones or to reveal the secondary effects of cholecystic disease on the stomach or duodenum. Those of us who strove earnestly to achieve these ends will recall that, despite strenuous efforts, disappointments were too common and successes too rare.

Then came cholecystography, so well developed at its debut that it seemed to be quite mature. Its principles were complete and clear; its rationale of interpretation was obvious; and its investigative scope was twofold, were to be expected, and none have occurred. Nevertheless, progress has been made by changes of detail within comprising both cholecystic function and anatomic integrity. No basic changes in the method from without the original pattern of the test.

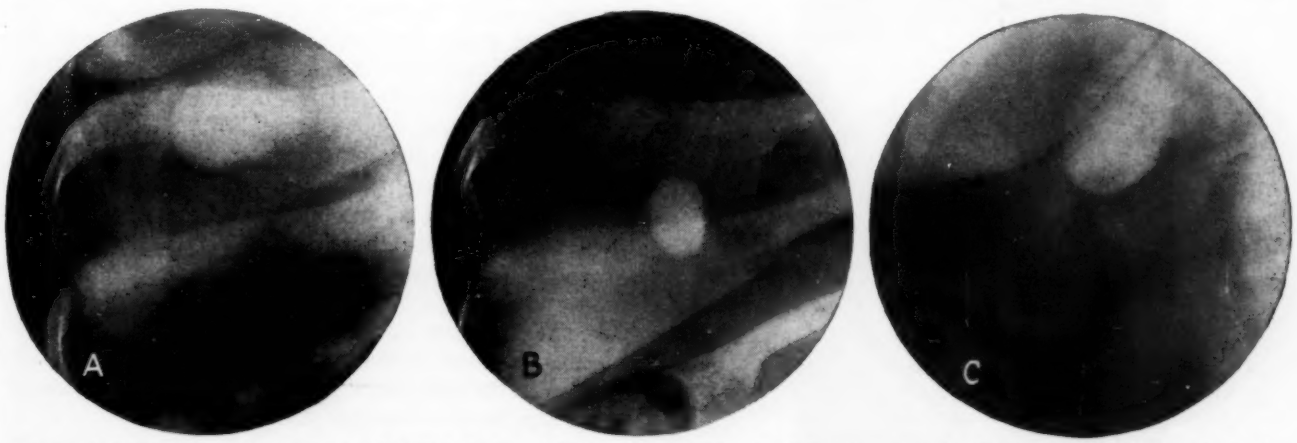

Fig. 1.—*A*, initial cholecystogram showing indistinct shadow at fundus of gallbladder; *B*, cholecystogram made after ingestion of fatty meal, showing homogeneous shadow of contracted gallbladder; *C*, reexamination showing stone at fundus of gallbladder. Cholecystographic diagnosis was confirmed by operation.

EARLY IMPROVEMENTS

Most important among early internal improvements of the method was the discovery that the dye—first the bromine compound, later the iodine compound—could be given effectively by mouth, thereby eliminating the difficulties and hazards of intravenous administration and greatly extending the employment of cholecystography. However, the oral method of administration often had the disadvantage of exciting nausea and ejection of the dye, although, as a rule, the patient was required to take it on an empty stomach. So annoying was this drawback that various diluents designed to prevent it were tried but without effect, and new compounds that would not nauseate were sought but without success. Finally, it was found that when the iodine compound, then in common use, was given along with a substantial meal, gastric upsets became much less frequent.

Many other modifications of cholecystography, derived from experience, were gradually incorporated into the procedure. Two especially important lessons were learned: first, that a painstaking radiographic technique was required, and second, that the test did not always furnish self-evident diagnoses but that cautious, well-reasoned interpretation of the cholecystogram was necessary. In 1939, at the midpoint of its career to date, the method was so nearly standardized that it seemed to offer little opportunity for further betterment. At that time, however, one of us [1] (B. R. K.) made the following prediction: "Notwithstanding the high degree of efficiency already obtained by cholecystography its progress will not cease. It is almost certain that by improvements in apparatus, further refinement of radiologic technique and the discovery of new ways to forestall obscuring factors, the cholecystogram will become more clearly legible and thus enhance diagnostic accuracy. New and better dyes will doubtless be discovered. . . . At all events, it is safe to assume that the already low proportion of errors will continue to diminish."

Most of these hopeful predictions have been fulfilled, and the general efficiency of the method has been increased but without any notable changes in its original plan and structure. At the Mayo Clinic, the roentgenologists of the diagnostic section, realizing that the efficiency of cholecystography depends primarily and chiefly

From the Section of Radiology, Mayo Clinic (Dr. Kirklin); and the Section of Radiology, Mayo Foundation, University of Minnesota (Dr. O'Donnell).

Read in the Symposium on Roentgen Examination of the Gall Bladder and Jaundice before the Section in Radiology at the 101st Annual Session of the American Medical Association, Chicago, June 11, 1952.

1. Kirklin, B. R.: Cholecystography in Its Fifteenth Year, South. M. J. **32**: 822-824 (Aug.) 1939.

on the technique employed, have constantly cooperated with the technicians in an effort to improve the technical procedure whenever possible and to apply every detail with punctilious care. It was felt that interpretation would take care of itself if cholecystograms could be obtained that were free from blurring by movement and unobscured by overlying structures or intestinal contents or by fog from secondary irradiation. Many alterations of the ritual of examination have been tried from time to time, and those found worth while have been retained in the current procedure.

CURRENT PROCEDURE

Contrast Medium.—The compound we now employ is iodoalphionic acid (priodax®), and it has been used for several years following a long period during which tetraiodophenolphthalein was in use. Iodoalphionic

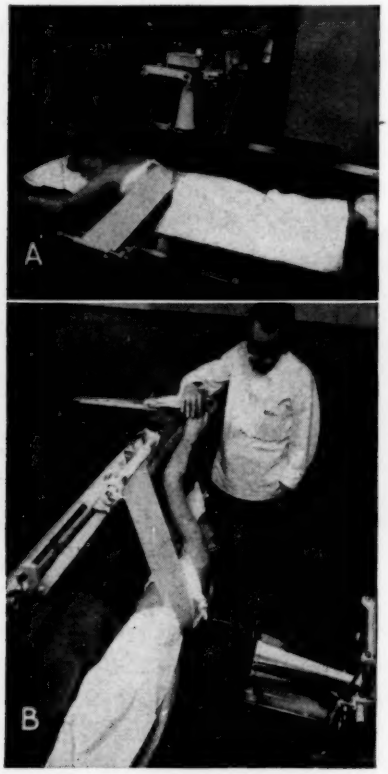

Fig. 2.—Special table for making cholecystograms with patient in right lateral decubitus position: *A*, patient strapped to table, which is slightly rotated on its longitudinal axis; *B*, table and tube revolved to angle of 90 degrees.

acid produces marked reactions much less often than tetraiodophenolphthalein does, although the former oftener causes petty but somewhat disagreeable side-effects. Other dyes are available that produce fainter or denser shadows of the gallbladder, but in changing dyes the roentgenologist should be careful not to become confused by the alteration in the scale of densities on which he is accustomed to rely for judgment as to the ability of the gallbladder to receive and concentrate dye-laden bile. It would seem, too, that an extremely dense shadow of the gallbladder might conceal evidence of gallstones (fig. 1). Immediately below are given additional features of the technique presently employed at the clinic.

On the day before his examination, the patient is supplied with six 0.5 gm. tablets of iodoalphionic acid and instructed to take them at 6 p. m. during or immediately after a meal of the usual quantity but not including any eggs, cream, butter, or other fats. He is also directed not to take thereafter any purgative or any food or drink other than water, black coffee, or clear tea until the examination is finished. He is further instructed to take a rectal injection of warm water the next morning, one and a half hours before his appointment for examination, and to repeat the injection a half hour later.

First Set of Cholecystograms.—When the patient appears at his morning appointment for roentgenography, care is taken to put him at ease and to relieve any anxiety that he may have. Some patients are apprehensive of the apparatus or of the test or its results and are likely to spoil the cholecystograms by movement. This point may seem too finely made, but it has very practical aspects. For the first set of cholecystograms the patient lies prone on the table, on which he is immobilized by a broad canvas band stretched over his back. His face is turned aside and his arm extended over his head. Two or three cholecystograms are made posteroanteriorly, the 8 by 10 in. (20.3 by 25.4 cm.) films being distributed so as to cover successively the entire right side of the abdomen, from costal arch to pelvis, and thus reveal the gallbladder, whatever its site may be. The Potter-Bucky diaphragm is employed throughout the examination. The exposure formula, which of course is not necessarily applicable to other installations, is as follows: distance, 36 in. (91.4 cm.); milliamperage, 180; peak kilovolts, 50 to 70, depending on the thickness of the patient; time, 0.2 second. When the films are processed, they are scanned by the technicians for two purposes: (1) to ascertain the position of the gallbladder and (2) to see whether gallstones are revealed, in which event further roentgenography is often deemed unnecessary. As a rule, however, the established routine, which calls for a second and third set of cholecystograms, is observed.

Second Set.—The second set of roentgenograms is made about two hours after the first, with the patient again recumbent on the special table (fig. 2), which can be rotated on its long axis to any desired angle by a built-in motor. Integral with the table are the tube carrier, cassette holder, and motorized Potter-Bucky diaphragm, all of which revolve with the table. The patient lies prone on the table, and, after he has been strapped in place with a canvas binder, the table is revolved to an angle of 90 degrees (fig. 2*B*). The binder is then loosened for a moment to permit the viscera to rearrange themselves and is then retightened. This is very important. With the patient in this right lateral decubitus position, the gallbladder falls away from the spinal column and the gas-filled loops of bowel, and, as a result, the cholecystogram is seldom obscured by either (fig. 3 and 4). Two 8 by 10 in. (20.3 by 25.4 cm.) films are exposed, each placed so as to depict the region of the gallbladder, the site of which usually has been ascertained by inspection of the first set of cholecystograms.

Before the second World War, we had successfully given vasopressin injection (pitressin®) hypodermically to eliminate intestinal gas, which is perhaps the commonest and most annoying obstacle to satisfactory roentgenography of the gallbladder. As the war progressed,

vasopressin became unobtainable, and some other solution of the gas problem had to be found. Accordingly, Mr. Franklin J. Whalen, supervising technician in charge of cholecystography, cooperated with one of us (B. R. K.) in trying different angles of roentgenography and various positions of patients. Eventually, the right lateral decubitus position was found to be quite effective and was incorporated in the routine. In our early experiments, a wooden table and a vertical Bucky cassette changer were used. The patient lay on his right side facing the cassette changer and was secured to it by a canvas binder. This improvised apparatus is still in frequent and successful use. However, in order to expedite the work the roentgenologic personnel, in cooperation with the manufacturer's engineers, designed the revolving table.

Third Set.—Two or three hours after the second set of cholecystograms has been made and one hour after the patient has been given 6 oz. (180 cc.) of 20% cream to stimulate emptying of the gallbladder, the third set is made. Again, as in making the first set, the patient lies prone on the table. Two exposures are made, and the axis of the rays is directed through the site of the gallbladder, if it has been revealed, or, if not, through that region. Even if the gallbladder has not filled previously with dye-laden bile, the third set is nevertheless made, for demonstrable filling occasionally is delayed to this time.

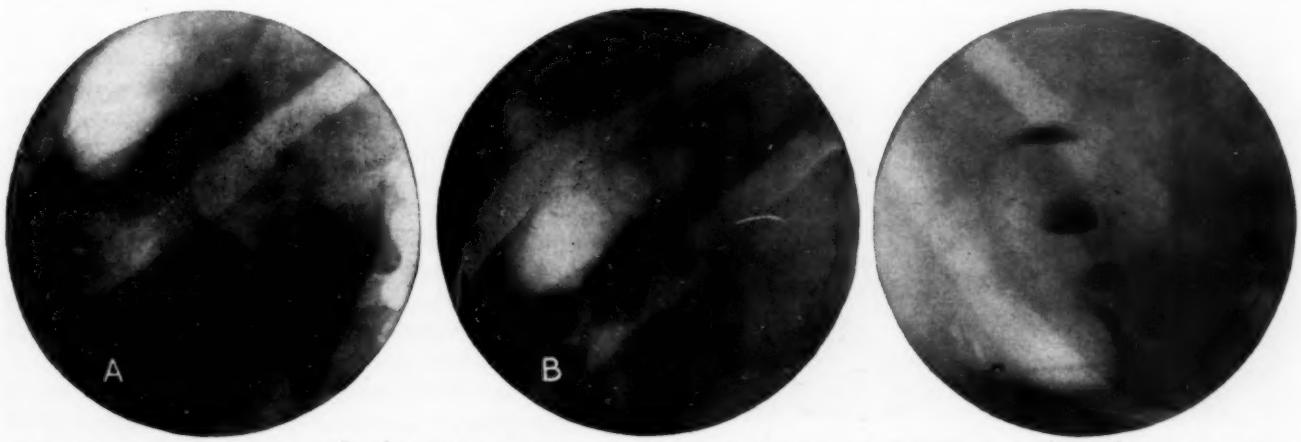

Fig. 3.—*A* and *B*, cholecystograms made with patient in prone position, with no definite evidence of gallstones in either cholecystogram; *C*, cholecystogram made with patient in right lateral decubitus position, showing layer of gallstones.

FURTHER TECHNICAL POINTS

The two positions employed together as a routine procedure, the prone and right lateral decubitus, are sufficient most of the time. Either will usually show a gallbladder that is functioning. The prone position seems to excel in revealing the small tumors (adenomas and papillomas). As a rule the right lateral decubitus position is superior in showing the faintly depicted shadow of a poorly functioning gallbladder or of light gallstones, especially when they are arranged in strata. Occasionally, however, the right decubitus position fails to eliminate obscuring factors, and the vertical position should be tried, for it is likely to be successful. In some instances, also, in making the second cholecystogram of the same set, it is desirable to direct the axial rays slightly off center and thus obtain a view that is somewhat different from the first and perhaps more informative. In short, when the routine gives uncertain results, the intelligent technician will vary it in small particulars or add items that have proved to be worth while.

Diagnostic reports should state whether the gallbladder is functioning normally, poorly, or not at all, as indicated by a normal or faint shadow or by the lack of any shadow. With the foregoing technique, no shadow should be reported as faint, unless it is persistently so thin that it is scarcely discernible, and every gallbladder should be judged by its best shadow, not by its worst. In recent years it has become possible to identify adenomas and papillomas of the gallbladder. At this late date it should not be necessary to warn that a cholecystographic report of disordered function, gallstones, or tumors should never alone be regarded as calling for an operation, for the finding may have no relation to the patient's symptoms, and final judgment as to treatment must be left to the clinician.

The diagnostic efficiency of the technique described is shown by the fact that as high as 98% of positive diagnoses have been confirmed in cases in which the patients later have been operated on. We feel that this high percentage of confirmations is due primarily to the high quality of the cholecystograms produced under the supervision of an experienced and skilled technician, who is charged solely with this work and is alert for any new ideas that might bring the test nearer to perfection.

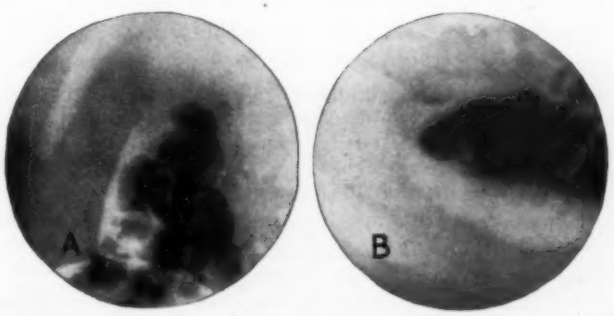

Fig. 4.—*A*, cholecystogram made with patient in prone position, with gallbladder partially obscured by gas; *B*, cholecystogram made with patient in right lateral decubitus position. This position allows gallbladder to fall away from distended loops of intestine.

ROENTGENOLOGIC EXAMINATION OF GALLBLADDER WITHOUT OPACIFICATION

Clyde A. Stevenson, M.D., Temple, Texas

Just before the turn of the century, Buxbaum of Germany succeeded in obtaining radiographs of opaque gallstones in the living patient, and it soon became apparent that the calcium content of the stones was the important factor in whether or not they would be shown on the roentgenogram. With improvement in x-ray equipment and technique, more and fainter opaque calculi became discoverable; but the value of the scout or plain roentgenogram for examination of the right upper quadrant of the abdomen became of less importance after the process of opacifying the gallbladder was developed by Graham and Cole.

With most emphasis being placed on the new mediums for visualization of the gallbladder, there is some tendency to neglect the plain roentgenogram of the right upper quadrant. Bockus [1] points out that if a scout roentgenogram of the gallbladder area is not obtained prior to cholecystography, the nonfunctioning gallbladder filled with milk-of-calcium bile may not be recognized. The scout film sets the stage for successful cholecystography [2] by determining the gallbladder area and revealing any abnormal soft tissue shadows or opaque areas that might be confusing. In instances of acute disease probably located in the right upper quadrant of the abdomen, the scout film will be of distinct aid, for opacification may be contraindicated. When the gallbladder area is examined without opacification, the roentgen findings of importance may be grouped as follows: (1) primary shadow of an enlarged gallbladder or a relatively normal sized organ with greatly thickened walls; (2) gaseous shadows in the gallbladder or hepatic ducts (residual barium from previous gastrointestinal examination may have the same significance); and (3) any abnormal opaque area in the gallbladder region.

Fig. 1.—Artist's drawings (from roentgenograms) showing constant relationship of inferior liver margin, hepatic flexure of colon, and descending duodenum despite alterations of their position in relation to ribs, spine, and pelvis. Arrow points to gallbladder region in each instance.

A definite gallbladder shadow is indicative of gallbladder disease. Usually, this finding is due to a large, distended gallbladder or one with greatly thickened walls; but in a series of 14 cases of carcinoma of the gallbladder seen by our group, there was an abnormal soft tissue shadow in the gallbladder region in seven instances. Gas in the gallbladder, its walls, and pericholecystic tissues is pathognomonic of emphysematous cholecystitis,[3] while gas in the biliary tree usually indicates a cholecystoduodenal or cholecystocolic fistula.[4] The radiologist must bear in mind that a previous cholecystogastrostomy or, rarely, regurgitation of gas from the duodenum up the common duct may give similar findings. Barium from a previous gastrointestinal examination may find its way by means of a fistula into the duct system, so that it then has the same significance as the gaseous shadows. It is often difficult to visualize the actual fistulous tract with barium, but in these cases it is not too uncommon to find barium residue in the hepatic ducts or gallbladder 24 or more hours later.

The plain roentgenogram of the gallbladder region gives its greatest diagnostic yield in the instance of abnormal calcification. Quite often this preliminary study will afford a diagnosis or, at least, correct localization of the opaque areas when such a diagnosis may be difficult after opacification of the gallbladder. Calcification of the gallbladder wall is justifiable evidence of previous gallbladder disease, while the presence of opaque calculi may indicate cholecystitis or, at times, extrabiliary disease that has played a part in gallstone formation. It is a proved fact that most cases of acute cholecystitis have a calculus impacted in the cystic duct. Recognition of a single calculus medial to a collection of calculi in a patient with acute disease in the right upper quadrant is of importance and aids in the diagnosis of acute cholecytitis, but it must be remembered that only 10% or less of gallstones are opaque enough to be visualized on the plain roentgenogram.

Differential diagnosis is usually not difficult where a gas shadow or primary gallbladder shadow is concerned, but opaque gallstones must be differentiated from renal calculi and occasionally from calcified mesenteric nodes, calcified areas in the liver, calcified rib cartilages, pancreatic calculi, barium residues from a previous gastrointestinal examination, and opaque foreign bodies in or outside the bowel. As far as the plain film of the gall-

From the Department of Radiology, Scott and White Clinic.

Read in the Symposium on Roentgen Examination of the Gall Bladder and Jaundice before the Section on Radiology at the 101st Annual Session of the American Medical Association, June 11, 1952.

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2. Ramey, P. M., and Scott, A. C., Jr.: Management of Acute Cholecystitis, Texas State J. Med. **37**: 664-669 (Feb.) 1942.

3. Stevenson, C. A.: Emphysematous Cholecystitis, Am. J. Roentgenol. **51**: 53-60 (Jan.) 1944.

4. Stevenson, C. A., and Sherwood, M. W.: Roentgen Diagnosis of Cholecystocolic Fistula, Radiology **35**: 616-621 (Nov.) 1940.

bladder area is concerned, opaque renal and biliary calculi cannot be differentiated (with the exception of a staghorn renal calculus) by appearance alone. I have seen an almost exact counterpart of any opaque gallstone to be located in the kidney. The fact that a laminated opaque stone is present in the right upper quadrant does not necessarily imply it is biliary in origin, for again a renal calculus may be identical to this type.

In attempting to localize an opaque area in the gallbladder region, radiologists employ well-known physical principles to determine whether the area in question is in the anterior or posterior portion of the right upper quadrant. This procedure consists in comparing the shift in position of the opaque area on two different roentgenograms in relation to the shift of the transverse process of a vertebra. Films exposed in the anteroposterior and posteroanterior positions, as well as lateral exposures, are of additional help in localization. Equally important, however, is the fact that the normal soft tissues in the right upper quadrant give further aid in localization of the gallbladder area. These findings have not been sufficiently emphasized in the past, and the diagnostic yield of the plain roentgenograms of the right upper quadrant will be increased if they are of excellent technical quality and the radiologist identifies the soft tissue shadow of the liver, kidney, hepatic flexure of the colon, and, at times, the descending duodenum.

Just as the roentgenographic area of the four cardiac valves may be covered with a silver dollar, a somewhat larger circle or ellipse whose circumference touches the inferior liver edge, hepatic flexure of the colon, and the first and second portions of the duodenum will enclose the gallbladder area. Because of anatomic supporting structures, these three areas bear a constant relationship to each other (fig. 1) and are closely associated regardless of the size or habitus of the patient. One can be sure that the so-called "flat plate" of the gallbladder actually covers the gallbladder region only when these three structures are identified. The liver edge is, of course, easily seen, and the hepatic flexure of the colon can consistently be visualized by its fecal or gas content. The descending duodenum can only be visualized when fluid, gas, or food is present. If the duodenum is not visualized, another roentgenogram about 15 minutes after ingestion of food or fluid will normally enable one to outline this portion of the bowel. A small amount of barium may be necessary for conclusive localization.

The identification of these soft tissue shadows is of equal importance in interpretation of roentgenograms after opacification of the gallbladder, and the danger of reporting a nonfunctioning gallbladder can largely be eliminated when the gallbladder concentrates the medium but is located elsewhere than in the right upper quadrant. Transposition of the abdominal viscera, local anomalies of the duodenum or colon, and extremes of gallbladder position from the level of the 10th rib to below the right iliac crest and even to the left of the spine (fig. 2) do not constitute diagnostic hazards, provided the liver edge, hepatic flexure of the colon, and descending duodenum are located on the plain film. An ellipse will often enclose the gallbladder area better than a circle, but in either instance the long diameter varies considerably from patient to patient. On an average this distance is 8 cm., but no significance should be placed on this measurement as long as the three areas in question are within the circumference.

SUMMARY

The plain film of the gallbladder area can yield considerable information of clinical value. Opaque areas may be accurately localized in regard to their position in relation to the anterior or posterior portions of the abdomen and also whether or not they are in the gallbladder region. A primary gallbladder shadow always indicates gallbladder disease. With rare exceptions, gaseous shadows in the gallbladder or biliary duct system indicate a definite pathological process. The roentgenographic visualization of the inferior liver margin, hepatic flexure of the colon, and descending duodenum will locate the gallbladder area and minimize diagnostic errors.

Fig. 2.—Roentgenogram showing liver in normal position (white arrow) but opacified gallbladder to left of midline (black arrow). Hepatic flexure and descending duodenum could not be visualized in plain roentgenogram. A widened search revealed duodenum and gallbladder to left of midline. Gallbladder had a long mesentery.

213 W. Avenue G.

Urinary Retention Due to Banthine.®—During the past year I have seen 10 patients with urinary retention which I believe was precipitated by banthine therapy. All were ulcer patients and had various degrees of prostatic hypertrophy. However, they had been voiding fairly well and never had urinary retention up to the time banthine was started. . . . In one instance a patient, who had benign prostatic hypertrophy which was relieved by transurethral resection with good results and no residual urine, suddenly had trouble voiding several months after operation. In going over the patient's history it was discovered that his physician . . . had started him on banthine for ulcer the week before his recent difficulty in voiding started. He was advised to discontinue banthine and his urinary symptoms promptly disappeared. . . . In some cases complete urinary retention may be relieved by discontinuance of the drug, and by catheter drainage for a few days, while other patients may require operation.—J. I. Waller, M.D., Urinary Retention Due to Banthine, *Journal of Urology*, October, 1952.

PEROPERATIVE AND POSTOPERATIVE CHOLANGIOGRAPHY

Everett L. Pirkey, M.D., Lawrence A. Davis, M.D.
and
Lawrence A. Pilla, M.D., Louisville, Ky.

Cholangiography consists of the roentgen visualization of the biliary tree in whole or in part. The method is to inject a radiopaque substance directly into the lumen of the biliary ducts and then make roentgenographs. Numerous variations of this technique have been described. The first reported use was by Cotté [1] in 1929. Independently, Gabriel [2] reported the injection of iodized oil (lipiodol®) through a T-tube in the common duct in the following year. In 1931, Overholt [1] of Philadelphia reported its first use in this country. Since that time numerous articles on its employment have appeared. Mirizzi [3] of Argentina read a paper on peroperative cholangiography in 1931. He followed through on this method in the next 10 years, placing peroperative cholangiography on a practical basis.

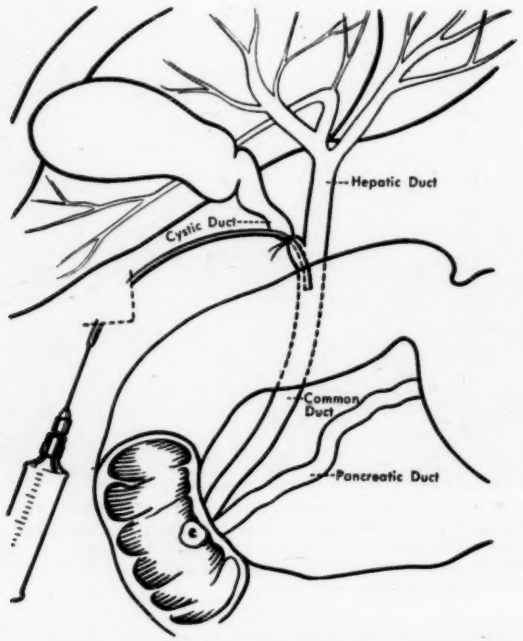

Fig. 1.—Diagram showing insertion of catheter in cystic duct during gallbladder operation. Note position of suture that prevents backflow of dye into gallbladder and, at the same time, anchors catheter.

Peroperative cholangiography has the same indications as surgical exploration of the common duct [4]: that is, (1) history of jaundice, past or present, (2) thickening and/or dilatation of the ducts, (3) small fibrotic gallbladder, (4) cirrhosis of the liver, (5) small stones in the gallbladder, (6) thickened muddy bile, (7) suspected or palpated stone in the common duct, and (8) enlargement of the head of the pancreas. Lahey [4] has pointed out that the more explorations of the common duct that are done the more stones that are found. He stated [5] that 39% of his patients with proven common duct stones had no history of jaundice. The above indications are at best only presumptive and are by no means definite. It was with the hope of placing the need for common duct exploration on a concrete basis that peroperative or immediate cholangiography was introduced by Mirizzi.

Fig. 2.—Peroperative cholangiogram done with emulsion of ethyl iodophenylundecylate, showing catheter in cystic duct, with normal biliary tree. Small linear shadow parallel to lower end of common duct is pancreatic duct. Emulsion is also in duodenum.

PEROPERATIVE METHOD

Our method of peroperative cholangiography consists of placing a cassette tunnel or portable Bucky diaphragm under the patient before the operative preparation and draping. The patient is then prepared in the usual manner for gallbladder surgery. After identifying the cystic duct, the surgeon makes a small incision in the duct, through which a ureteral catheter is inserted. A suture is tied about the cystic duct, including the catheter, to prevent backflow into the gallbladder (fig. 1). The metallic instruments in the region are removed. The wound is covered with a sterile cloth. The x-ray tube is positioned. The anesthetist hyperventilates the patient to produce a

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The illustrations were prepared by the Department of Visual Education, University of Louisville School of Medicine.

The emulsion of ethyl iodophenylundecylate used in this study was furnished by Lafayette Pharmacal Inc., Lafayette, Ind.

From the Department of Radiology, University of Louisville School of Medicine. Aided in part by a grant to the medical school from the Kentucky State Medical Research Commission.

Read in the Symposium on Roentgen Examination of the Gallbladder and Jaundice before the Section on Radiology at the 101st Annual Session of the American Medical Association, Chicago, June 11, 1952.

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2. Gabriel, W. B.: Proof of Patency of the Common Bile-Duct by the Injection of Lipiodol, Lancet **1**:1014-1015, 1930.

period of apnea. About 20 cc. of an aqueous emulsion of ethyl iodophenylundecylate [6] are injected through the catheter. An exposure is made as the last few cubic centimeters are injected (fig. 2). The film is then removed from the tunnel and developed.

During film development, the surgeon proceeds with the dissection and removal of the gallbladder. Before this is completed, the processed cholangiogram is ready for interpretation, the principal interest being whether a stone or other pathological condition is present in the common duct to warrant its exploration. A normal appearing duct system on the film should be ample evidence against the need of an exploration, and if this should be the result of the examination, the patient's wound is then closed. If an abnormality is seen, however, an exploration is done in the usual manner. Mixter, Hermanson, and Segel,[7] in a review of 406 cases of peroperative cholangiography, found that the procedure reduced materially the number of patients requiring exploration. They also found that in

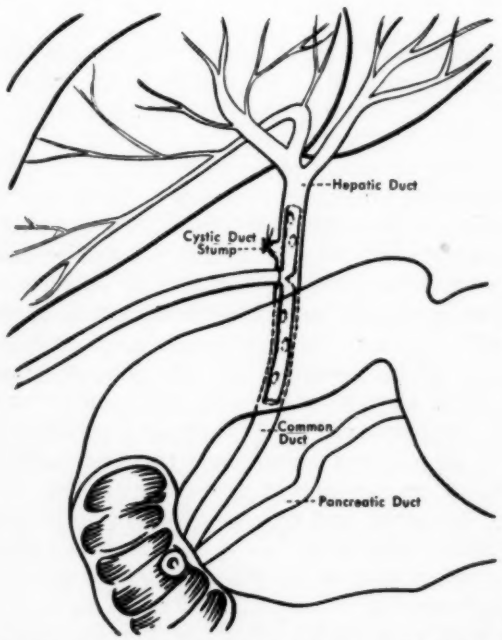

Fig. 3.—Diagram of postoperative cholangiogram, with T-tube in common duct.

146 patients in whom they did cholangiography through the T-tube but before the wound was closed, 19 (or 13%) showed stones still present after the common duct had been explored.

POSTOPERATIVE METHOD

Postoperative cholangiography is possible in those patients who have had a common duct exploration and a T-tube left in the duct following surgery (fig. 3). This may be done any time postoperatively, usually three weeks at our institution. The purpose is to determine the patency of the duct system and the presence or absence of stones before the removal of the tube.

The patient is placed on the x-ray table. The T-tube is unclamped and is flushed several times with isotonic sodium chloride solution to remove any mucus or other debris. Following this, the tube is again clamped, care being taken to prevent the introduction of air bubbles. A 20 cc. syringe is filled with an emulsion of ethyl iodophenylundecylate,[6] and an 18 gage needle is inserted through the tube proximal to the clamp. Under roentgenoscopic control, the emulsion is injected. Filling of the biliary tree is directly observed. If the opaque medium enters the duodenum, the injection is stopped and a cholangiogram is made. If an obstruction is observed, films are made in an attempt to identify the cause (fig. 4).

Postoperative cholangiography is an essential procedure in our institution before the removal of a T-tube. It is also done in those patients having a cholecystostomy with a tube left in the gallbladder. It is only by this procedure that the condition of the bile ducts can be ascertained before their extra means of drainage is removed. The only contraindication to this method is acute inflammation of the bile ducts.

COMMENT

Postoperative cholangiography is well established as a routine in all patients with external drainage of the biliary passages and needs little amplification at this time. The

Fig. 4.—Postoperative cholangiogram done with emulsion of ethyl iodophenylundecylate, showing incompletely obstructing stone in distal end of common duct. Note emulsion in duodenum and pancreatic duct.

opaque material we have used in our patients is an aqueous emulsion of ethyl iodophenylundecylate that, because of its water base, has a lower viscosity and surface tension than the oils. It will enter the smaller ducts and

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will also have no droplet formation. It is not readily absorbed through the wall of the ducts; therefore, delayed studies are possible as with the oils. These factors have permitted films of better diagnostic quality with this new material than with other substances currently available.

In peroperative cholangiography, the milky white color of the emulsion enables the surgeon to immediately identify a leak in either the catheter or the duct, if such occurs. This opaque material has been used for 58 cholangiograms in 33 patients with no untoward results.

SUMMARY

A brief history of the development of peroperative and postoperative cholangiography is given. The indications and technique of peroperative cholangiography as used at our institution are reviewed. The method and need for postoperative cholangiography are shown. A brief comment on the advantages of a new radiopaque material (aqueous emulsion of ethyl iodophenylundecylate) for cholangiography is made.

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BARIUM STUDY OF GASTROINTESTINAL TRACT IN DETERMINING CAUSE OF JAUNDICE

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In jaundice, as it occurs in from 80 to 90% of patients, usually only a thorough clinical work-up and certain rather specific laboratory tests are required in order to establish the etiology of the condition. There is a certain small group of patients, however, in whom the diagnosis is extremely difficult to establish, because the history is confusing and the laboratory and physical findings are equivocal. Here the clinician needs all available help, and the roentgenologist by means of barium study of the gastrointestinal tract may offer valuable information, aiding greatly in the differential diagnosis of jaundice.

Many pathological conditions are responsible for the production of jaundice, but one type in which barium study may be of help is the type known as obstructive jaundice. A mechanical obstruction may result from blockage of the lumen of the ducts from within, which may occur, for example, when there are common duct stones, stricture, or neoplasm. Inflammatory or neoplastic lesions in structures adjacent to the biliary ducts may also produce obstruction, the former by pressure and the latter by invasion and less frequently by pressure.

It has been said that, excluding hemolytic jaundice, one-half to two-thirds of the cases of icterus are of the obstructive type.[1] The jaundice in this group is caused by a benign lesion in about one-half the cases and by a neoplasm in the remaining half. The most important benign lesions causing obstruction are common duct stones, while acute recurrent pancreatitis also is considered to be among the commoner causes of extrinsic obstruction. Of the primary malignant lesions, carcinomas of the pancreas, papilla of Vater, duodenum, gallbladder, and common duct all may produce obstructive jaundice.

Of the periampullary lesions that produce obstructive jaundice, probably the most important is carcinoma of the head of the pancreas. The presence of jaundice is noted in 50 to 90% of cases. Recently, one of us (J. W. B.), in conjunction with B. R. Kirklin,[2] reported 167 cases of this disease and found some roentgenologic abnormality of the stomach or duodenum in 42% of these cases. Broadbent and Kerman [3] found positive roentgen findings in 78% of 102 cases of pancreatic cancinoma, while others have reported equally good results.[4]

Carcinoma of the ampulla of Vater is much less common than pancreatic malignancy, but the clinical and pathological pictures are almost indistinguishable. Jaundice is present about as frequently as in carcinoma of the head of the pancreas, usually being present in more than 90% of the cases and occurring early in the course of the disease. The accuracy of the roentgen examination has varied in the reports of medical literature but apparently lies between 35 and 80%.[5] Patients with this particular lesion will respond much better to radical pancreatoduodenectomy, and the prognosis is better than in patients with carcinoma of the head of the pancreas.[6]

In contrast to ampullary malignancy, duodenal carcinoma usually produces jaundice late in the disease [7] and frequently when the patient is near the terminal phase of the illness. The incidence of jaundice has been reported as low as 16% in a group of 49 cases of malignant lesions of the duodenum, which Dixon [7] reported, and as high as 98% in a series of 222 cases, which Lieber, Stewart, and Lund [8] reported. Periampullar carcinoma of the duodenum is responsible for the production of jaundice in most cases, although supra-ampullary and infra-ampullary lesions may also cause icterus.

Because of space limitations, some of the bibliographic references have been omitted from THE JOURNAL and will appear in the authors' reprints.

Read in the Symposium on Roentgen Examination of the Gall Bladder and Jaundice before the Section on Radiology at the 101st Annual Session of the American Medical Association, Chicago, June 11, 1952.

Assistant to the Department of Radiology, Indiana University School of Medicine (Dr. John Beeler). Professor and Chairman of the Department of Radiology, Indiana University School of Medicine (Dr. Raymond Beeler).

2. Beeler, J. W., and Kirklin, B. R.: Roentgenologic Findings Accompanying Carcinoma of the Pancreas, Am. J. Roentgenol. **67**: 576-584, 1952.

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8. Lieber, M. M.; Stewart, H. L., and Lund, H.: Carcinoma of the Peripapillary Portion of the Duodenum, Ann. Surg. **109**: 383-429, 1939.

Carcinoma of the gallbladder or extrahepatic ducts also frequently produces obstructive jaundice. The high incidence of cholelithiasis associated with gallbladder malignancy makes the differential diagnosis often confusing. The roentgenologic studies may be of occasional help in recognizing the presence of a lesion and in pointing out its probably malignant nature. The knowledge obtained from the barium examination, however, is not so rewarding as it is in those lesions we have already mentioned.

Patients with a cholecystenteric fistula usually have a history of colic, jaundice, and symptoms of acute cholecystitis. There may be a rather sudden remission of these complaints, which occurs when the gallbladder empties its contents into some part of the gastrointestinal tract. The majority of fistulas extend from the gallbladder to the duodenum, with the colon and stomach less commonly connected. Rigler [9] has pointed out the accuracy of preoperative roentgen diagnosis and reported positive findings in 13 of 14 such cases.

Occasionally the finding of esophageal varices in patients with jaundice or a history of jaundice will be of great help to the clinician. This particular finding is especially helpful in patients with hepatic cirrhosis in whom there is no ascites or enlargement of the liver or spleen. The finding of varices in these cases may be the only demonstrable evidence of this disease. This has been emphasized by Schatzki,[10] who pointed out that demonstration of varices is possible in 50% of all cases of cirrhosis.

Jaundice may occur in either acute or chronic pancreatitis. Walters and Snell [11] report that chronic stenosing pancreatitis is one of the more frequent causes of extrinsic pressure producing obstruction of the common duct. In the acute phase of this condition the elevated blood or urine diastase is the distinctive laboratory finding.

ROENTGENOLOGIC FINDINGS

All of the aforementioned lesions will produce definite changes that can be detected by radiologists at the time of the barium meal. Since this examination can be done quickly and relatively inexpensively, we feel that it should be used routinely in all cases of obstructive jaundice in which there is any question of diagnosis.

Cancer of the head of the pancreas will give positive findings in from 40 to 50% of cases (fig. 1). Attention to the antral portion of the stomach and the entire duodenum may show one or more of the following lesions: localized deformity, mucosal ulceration, narrowing, obstruction, or filling defect. It has been shown that widening of the duodenal loop, once considered the commonest roentgen finding in the disease, occurs infrequently and usually only after the disease is quite advanced.[1] Unless the radiologist realizes this fact, he will overlook the vast majority of pancreatic carcinomas, and those which are found will be too advanced to have the benefit of radical surgery.

Carcinoma of the ampulla or papilla of Vater usually creates a small filling defect or mucosal ulceration of the second portion of the duodenum on the inner or concave aspect. Here again, the abnormalities seen in the duodenum at the time of the barium meal are due to invasion or tumor mass. As the disease progresses, the entire second portion of the duodenum may show the same changes as those seen in advanced carcinoma of the head of the pancreas.

Primary duodenal malignancy usually involves only a short segment of bowel, and the intrinsic nature of the lesion is often obvious (fig. 2). Obstruction is common late in the disease, adding to the hazard of accurate diagnosis. Positive roentgen findings following a barium meal were found in 16 of 49 patients (33%) in Lieber's series,

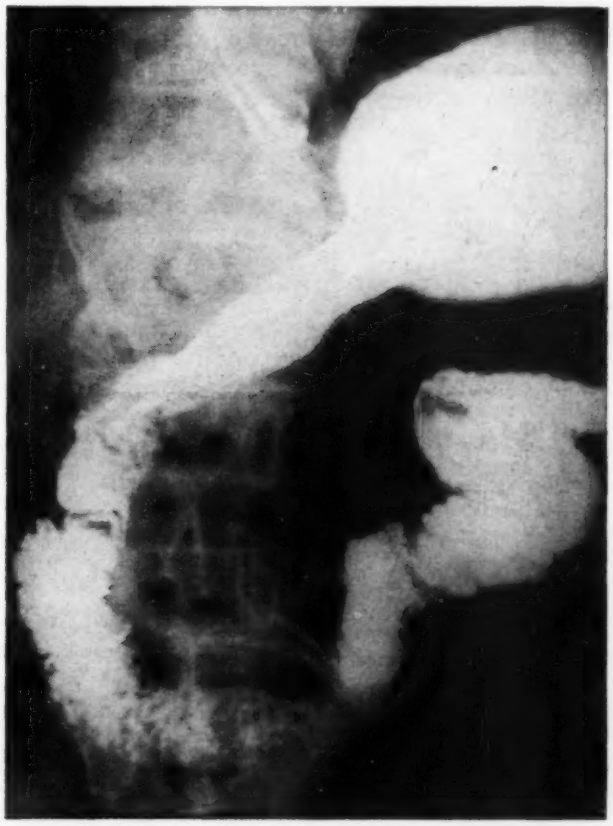

Fig. 1.—Roentgenogram of an 84-year-old man who had acute epigastric pain, vomiting, and jaundice. The barium study revealed a small filling defect in the ampulla and extrinsic pressure on the inner aspect of the first portion of the duodenum. The roentgenographic impression was that there was carcinoma of the ampulla of Vater. Autopsy revealed an adenocarcinoma, 6 cm. in diameter, arising in the head of the pancreas and invading the duodenum.

in 15 of 16 patients (93%) examined in Hoffman's group,[12] and in 35 of 37 patients (94%) in Dixon's series.

It is frequently impossible to differentiate the roentgen findings of carcinoma arising in the periampullary region. Even though these lesions may simulate the roentgenologic picture of each other very closely, this fact in no

9. Rigler, L. G.; Borman, C. N., and Noble, J. F.: Gallstone Obstruction, J. A. M. A. **117**: 1753-1759 (Nov. 22) 1941.

10. Schatzki, R.: Roentgen Demonstration of Esophageal Varices: Its Clinical Importance, Arch. Surg. **41**: 1084-1100 (Nov.) 1940.

11. Walters, W., and Snell, A. M.: Diseases of the Gallbladder and Bile Ducts, Philadelphia, W. B. Saunders Co., 1940.

way detracts from the usefulness of the procedure. We feel that Weber and Kirklin [13] were quite right in emphasizing that, if the existence of a lesion and its site can be predicted by the radiologist, the precise diagnosis is not necessarily required. Indeed, it is frequently foolhardy to give an exact diagnosis of the neoplasm, for, as Graham [14] has pointed out, within an area of not more than 1 cm. in diameter there may originate a carcinoma of the ampulla of Vater, head of the pancreas, end of the common duct, or of the duodenal mucosa.

The roentgenologic features of pancreatitis have been described very competently in the literature by Case,[15] Poppel [16] and others. The major aspects of the acute form are functional changes that are noted in the duodenal loop and the upper jejunum. These consist of reversed peristalsis, spasm, areas of stasis, and altered motor function. Localized or generalized ileus may be seen. Edema of the pancreas may cause enlargement of the duodenal loop without evidence of invasion, and the tender enlarged pancreas can be noted at fluoroscopy. The chronic form may show certain of the same findings seen in the acute stage of this disease, plus occasional parenchymal or intraductal calcification within the gland. The roentgenologist finding such abnormalities can offer the clinician definite aid if he is constantly on the alert for this condition, and unless the entire duodenum and upper jejunum are closely observed, the presence of abnormal motor function of the small bowel may be overlooked and may result in a false negative report.

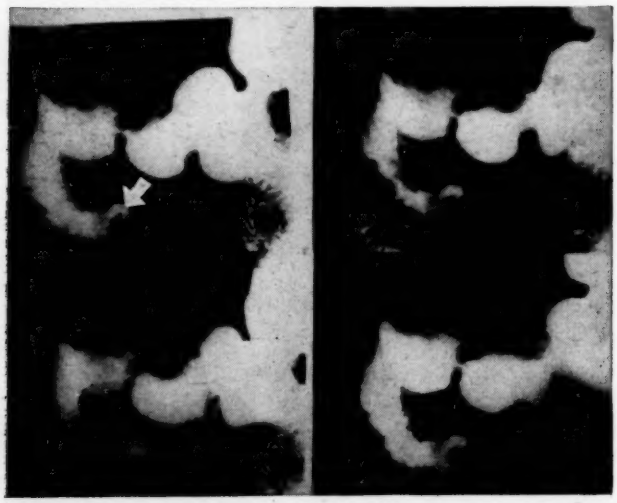

Fig. 2.—Roentgenograms made during barium study of a 44-year-old man with epigastric pain and jaundice. He had had two episodes of ulcer-type pain in the nine months before the study. A small ulcer crater with altered mucosal folds at the juncture of the second and third portions of the duodenum is shown (arrow). The roentgenographic impression was that there was carcinoma of the duodenum or pancreas with invasion of the duodenum. A radical pancreatoduodenectomy was done for carcinoma of the duodenum.

The internal biliary fistula is most commonly discovered by the finding of air in the biliary radicals. The roentgenographic appearance is typical, and the diagnosis is easy and accurate. Rarely the presence of air or barium in the biliary tree is seen in the patient who has a patulous sphincter of Oddi not associated with any other abnormality. Periampullar malignancy may also allow this reflux of barium and therefore secondary signs of these lesions should be looked for in any such case.

Lastly, the roentgenologic study of the gastrointestinal tract in patients suspected of having disease of the biliary tract is nearly always advisable. The presence of cancer of the stomach or colon that has metastasized to the liver and produced jaundice can be accurately diagnosed. Occasionally opaque shadows seen in relation to the barium opacified duodenum may suggest the possibility of stones in the common duct. In the case of the malignant lesions we have mentioned, the roentgen study is most valuable when abnormality is discovered in the preicteric form of the disease. In this earlier stage there is less chance for metastasis and more hope for cure by radical surgery.

SUMMARY AND CONCLUSIONS

Lesions producing obstructive jaundice, particularly periampullar malignant lesions, can be frequently discovered by means of the barium examination of the stomach and duodenum. The finding of esophageal varices is not only helpful in confirming an already suspected diagnosis but occasionally may be the only evidence of existing cirrhosis. Cholecystenteric fistulas can be accurately diagnosed by the radiologist. In the jaundiced patient, the roentgenologic examination of choice is the barium examination of the esophagus, stomach, and duodenum.

712 Hume-Mansur Bldg. (Dr. John Beeler).

13. Weber, H. M., and Kirklin, B. R.: Roentgenologic Manifestations of Tumors of the Small Intestine, Am. J. Roentgenol. 47: 243-253, 1942.

Antibiotic Dosage.—Dosage of antibiotic is usually based on body fluid levels: blood, spinal fluid, urine, and so forth. Fortunately the majority of infections encountered may be characterized as "accessible" to antibiotics; i. e., the antibiotic level in the serum and extracellular fluid can be considered to approximate the level at the site of infection. Such an assumption can be made by virtue of elementary pathologic knowledge, and by the promptness of therapeutic response to dosage schedules producing but modest serum concentrations.

Among the *accessible infections* may be included acute tonsillitis, acute catarrhal otitis media, lobar pneumonia, cellulitis in the early stages, and many others. Infections falling into this group are generally amenable to the dosage schedule to be described presently. However, once a peritonsillar abscess has developed, once the otitis media has become purulent, or a lung abscess or empyema has complicated the pneumonia, or the cellulitis has become a walled-off abscess, the infection is no longer accessible. The organism is separated from serum and extracellular fluid by a barrier of pus, necrotic material or fibrous tissue, and other methods of getting the antibiotic to the site of infection must be used. Subacute bacterial endocarditis, most meningitides, osteomyelitis, bronchiectasis, and the like must be considered *"inaccessible."*

The basic consideration, then, in planning antibiotic therapy, from the standpoint of dosage and route of administration, is the pathologic lesion rather than the apparent degree of illness of the patient. Lobar pneumonia, for example, has rarely failed to respond favorably to a modern antibiotic even in very small doses, even though this disease may produce a seriously ill and "toxic" patient. Yet clinicians are often prone to treat pneumonia with large doses of antibiotics, while a child with chronic purulent otitis media, an "inaccessible" infection with minimal systemic symptoms, will often evoke but little vigor and imagination in the use of these wonderfully flexible agents.—A. D. Hunt Jr., M.D., Antibiotics in Pediatric Practice, *Medical Clinics of North America,* November, 1952.

PARAVERTEBRAL TERATOID TUMOR WITH SCOLIOSIS

REPORT OF CASES

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Scoliosis resulting from teratoid involvement of the vertebral column is quite uncommon. The cases reported here, though probably not unique, present a number of features of interest.

CASE 1.—A boy, aged 3 years, had been afflicted since birth with a severe scoliosis of the thoracic and lumbar portions of the spine, associated with spina bifida. The latter involved the upper lumbar vertebrae, and from its depths protruded what appeared to be a meningocele. The congenital scoliosis, convex to the left, was centered at a slightly higher level.

Investigation regarding the spine was first made when the boy was 4 months of age. It was recorded then that the abdominal reflexes were present on the right but absent on the left. The cremasterics, on the contrary, were present on the left and absent on the right. Both knee jerks were active, but the ankle jerks could not be elicited. The feet were small but not deformed. Movements of the lower extremities, as of the upper, seemed to be quite normal. At the age of 11 months the child was examined once more. Again there was no evident paralysis of the lower limbs, and bladder and bowel control seemed normal. The spina bifida was considered to be of no great moment, but as before the scoliosis was recognized as severe and likely to become worse. Surgical intervention, however, did not seem advisable at this time.

At 3 years of age the boy was seen for the third time. The spina bifida was still causing him no difficulty, and the meningocele was not increasing in size. There was no evident paralysis, and sphincter control for both bladder and bowel seemed normal. However, the deformity of the spine was much worse: there was now a very marked kyphoscoliosis with convexity to the left centered about the thoracolumbar junction, with only very gradual compensatory curves. Though the child was very active and ran about; he seemed to lose his balance to the right, a difficulty assumed to be due to the extreme, poorly compensated spinal curvature. It was apparent that operative treatment had become not only imperative but urgent. He was very soon admitted to hospital.

Examination.—This 3-year-old boy was active, well nourished, and, apart from the spinal deformity, well developed. His head seemed unusually large, especially in the frontal regions, but he was very bright. Strangely, from in front the deformity was not remarkable except for some shortening of the trunk; from behind, however, it could easily be seen that a combined kyphosis, scoliosis, and twist of the spine was present at the thoracolumbar junction. At this level the vertebral column made an acute-angled bend, convex to the left. Complete neurological examination was not recorded, but no gross defect was noted.

X-Ray Investigation.—Roentgenograms revealed a lack of development of the right halves of the bodies of the lower thoracic and upper lumbar vertebrae, with associated absence of the lower three ribs on the right (fig. 1). The pathogenesis was more evident in the roentgenograms made when the patient was 4 months of age, wherein the vertebrae were seen at an earlier stage of ossification. The new films taken before the present admission in September, 1944, confirmed the clinical evidence of progression of the rotokyphoscoliotic deformity. They suggested also that the left halves of the upper lumbar vertebral bodies had fused, forming a boss on the convexity of the scoliosis, an impression shown later to be false.

Operation.—Surgery was carried out on Nov. 14, 1944, with the child lying prone and under endotracheal ether anesthesia. The spine was exposed from the midthoracic region to the sacrum. The spinous processes in the upper lumbar region demonstrated spina bifida, and in the defect was what appeared to be a meningocele about 4 cm. in diameter. The latter was not opened, but below it some operative trauma to the meninges resulted in a slight escape of cerebrospinal fluid. The laminas of the vertebrae on the side of the convexity were prepared for grafting, and along them were laid chips of cancellous bone taken from the wing of the left ilium. The grafts were held in place by bringing together the soft tissues. The rationale of this orthopedic procedure was not only to render the spine more rigid but also to retard growth on the convex side, so that some straightening might occur, as or if growth, even though slow, proceeded on the concave side.

Owing to unforeseen developments the child died in convulsion a few hours postoperatively. The cause of death was not established. Fat embolism was adequately ruled out, but

Fig. 1 (case 1).—Posteroanterior view of spine taken when patient was 3 years of age.

surgical shock, a transfusion reaction, aspiration asphyxia, ether convulsions, prolonged hypoxia, air embolism, or carbon dioxide poisoning may have played a part.

Post Mortem.—The brain was very large, weighing 1,465 gm. as compared to the average 1,100 gm. for a 3-year-old child. The enlargement was entirely supratentorial, microscopic examination indicating that the macrencephaly was associated with a severe degree of acute interstitial edema of both gray and white matter. The ventricles were small. The cerebellum and brain stem seemed normal and specifically showed no evidence of Arnold-Chiari malformation. The main lesions with which the child was afflicted were found in the vertebral tissues. (Minor deviations from the normal found in the remainder of the body are irrelevant to this paper, and operative changes per se need not be considered.)

Dr. R. I. Harris of the Toronto General Hospital gave permission to report case 1. Dr. W. L. Donohue of the Hospital for Sick Children, Toronto, gave permission for the report of case 2. Prof. E. A. Linell and Dr. M. I. Tom of the University of Toronto assisted in the preparation of this paper.

At the thoracolumbar junction was the marked right-angled kyphoscoliosis. It was associated with a slight rotation of the lower thoracic spine to the left, which threw the left ribs somewhat backward and the right forward. As a compensatory measure, the upper lumbar vertebrae were slightly rotated in the opposite direction. Posteriorly and to the right side in the angle of the scoliosis was the structure recognized clinically as a meningocele. This proved to be a mass of soft tissue largely lipomatous in nature. It was about 4 cm. in diameter and extended forward in the spina bifida defect to involve the spinal dura and (as ultimately discovered) underlying neural structures. Anteriorly, at the same level and on the same side, a marked bony defect was easily felt, and in this was a cyst about 2 cm. in diameter. The lumen of the cyst was filled with opaque, yellowish-white material. Through the upper portion of its thin wall a small hole extended into a cord-like pedicle, which could be traced into an adjacent vertebra. At the level of the lipomatous tissue and cyst, i. e., at the level of the greatest angulation, the spine was excessively mobile. The bony defect occupied by the cyst was accounted for by an absence of the right lateral halves of the bodies of the lower thoracic and upper lumbar vertebrae (fig. 2). This right-sided agenesis was complete in the 10th, 11th, and 12th thoracic and the 1st and 2nd lumbar vertebrae, and incomplete in the 9th thoracic and 3rd lumbar vertebrae. Two unfused ossification centers were present in the body of the latter. There were 12 ribs on the left, but on the right side only 9 ribs corresponding to the upper 9 thoracic vertebrae had developed. As mentioned above, roentgenograms had suggested that the abnormal upper lumbar bodies had fused to form a solid boss of bone, but longitudinal section of the spine showed that all the vertebral bodies were separated from their neighbors by fairly normal intervertebral disks. The upper lumbar vertebral spines were bifid.

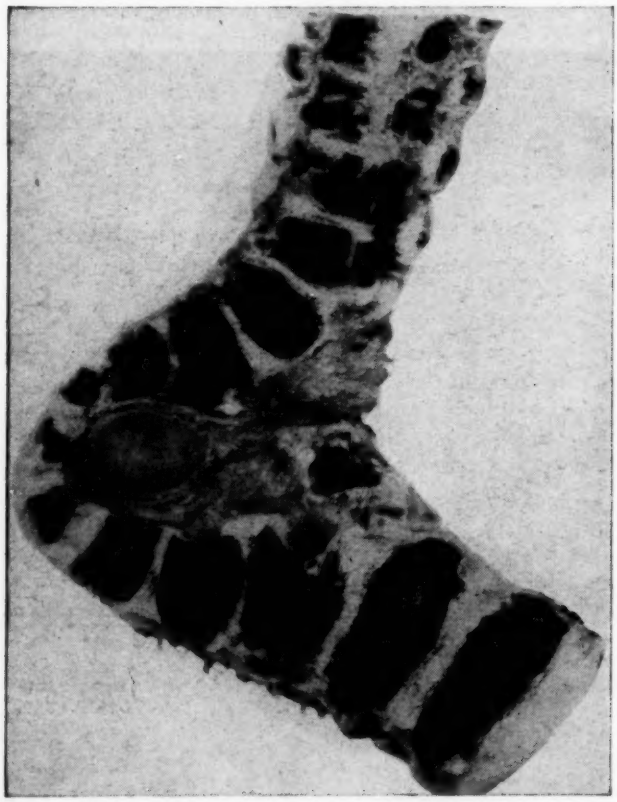

Fig. 2 (case 1).—Anterior half of spine (sectioned through vertebral bodies) viewed from back. Cyst is evident.

Grossly, the spinal cord was bent to a right angle and somewhat twisted by the spinal deformity. The large mass of lipomatous tissue (the meningocele of the history) extended forward from just beneath the skin through the spina bifida defect into the spinal canal, there penetrating the dura and arachnoid and becoming tightly adherent to the spinal cord, which it compressed and infiltrated. The lumbar portion of the vertebral canal was quite large, and its subarachnoid space contained only cauda equina and clear cerebrospinal fluid. There was no true meningocele and no myelocele.

Microscopically, the lipomatous mass projecting through the spina bifida defect was found to be teratoid. It consisted largely of fatty tissue, but contained also fibrous tissue, bone, cartilage, and both smooth and striated muscle. Though not appearing malignant on cytological examination, it had extensively invaded and destroyed the lumbar enlargement of the spinal cord. In the upper part of the lumbar enlargement, where destruction had been most widespread, the only cord tissue remaining showed marked gliosis (fig. 3). At this level the central canal communicated with the subarachnoid space, but myelodysplasia was too great to permit one to determine whether this communication occurred at the ventral or at some other surface of the cord. The ectopic cartilage and muscle were most in evidence at this plane of section. The lower part of the lumbar enlargement was less involved, but the posterior columns and one lateral column were infiltrated here by broad bands of dense fibrous tissue and again gliosis was prominent in the intervening white matter.

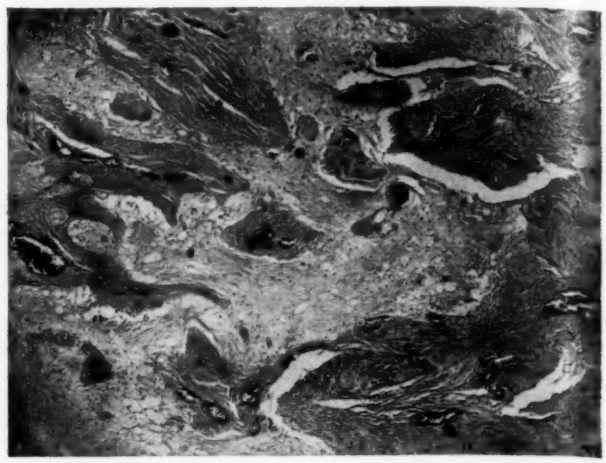

Fig. 3 (case 1).—Upper part of lumbar enlargement of spinal cord infiltrated by teratoid tissue.

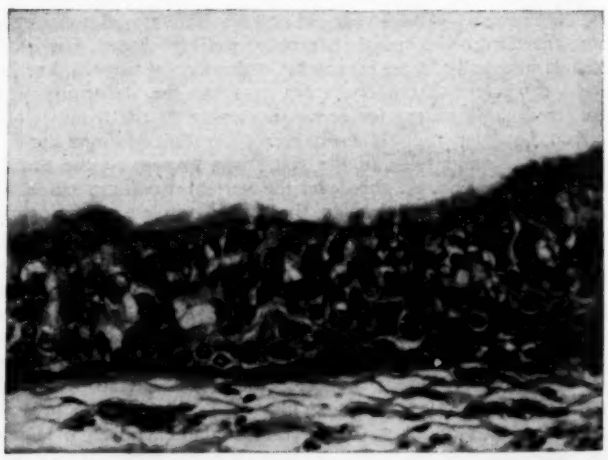

Fig. 4 (case 1).—Stratified columnar ciliated epithelium lining teratoid cyst.

The cyst that was apposed to the right side of the vertebral column at the apex of the concavity of the scoliosis was shown microscopically to be a "dermoid" or teratoid structure. It was lined by stratified columnar ciliated epithelium, outside which were lamina propria, muscularis mucosae, submucosa, two layers of smooth muscle, and a layer of loose areolar and adipose tissue (fig. 4). In the lamina propria were numerous lympho-

cytes that in one area were aggregated into a nodule. A section taken near the cord-like structure connecting cyst to vertebra showed a mass of closely packed xanthoma cells in a defect of the muscle coat. The areolar and adipose pericystic tissue was continuous with the dorsally placed lipomatous mass, suggesting that both cyst and "lipoma" were manifestations of the same teratoid process.

Comment.—The rarity of congenital scoliosis resulting from teratoid or teratomatous involvement of the spine may alone justify the reporting of this case. If not, full warrant is perhaps provided by the finding in it of several striking and unexpected features: 1. A child's vertebral column was, in effect, folded upon itself at the level of the thoracolumbar junction. 2. This had been brought about by a unilateral suppression of spinal and costal ossification centers by a teratoid growth. 3. As far as could be determined the latter was a single neoplasm, but was in part suggestive of a lipoma, in part a dermoid cyst. 4. The lipomatous portion at first was thought to be a meningocele but later proved to be an invasive or infiltrative growth that unilaterally involved the spines, laminas, and bodies of the upper lumbar vertebrae, and penetrated and extensively destroyed the lumbar enlargement of the spinal cord. 5. The cystic portion was directly posterior and apposed to the esophagus and bore to the latter perhaps more than just a juxtapositional relationship. 6. The child had little clinically recognized neurological defect.

Sachs and Horrax and others [1] have made surveys of the literature regarding intraspinal dermoids and in so doing have clarified the nomenclature of these and related tumors. Suffice it to say that tumors with recognizable tissues of two germ layers are classified as teratoid. The teratoid tumors and the teratomas differ etiologically from the epidermoid and dermoid tumors in that the former are believed to be due to neoplastic growth of multipotential or totipotential cells arising from a displaced or segregated blastomere (or in certain situations from a primitive germ cell) in the earliest embryonic period, whereas the latter are thought to be the result of infolding of epidermal or dermal tissues at a later developmental stage. The neoplasm here discussed (case 1), with its mesodermal lipomatous mass and endodermal cyst, fits most satisfactorily into the teratoid group. By virtue of its unusual position, extent, and structure, it had a triple relationship: to the vertebral column, to the mediastinum, and to the esophagus. Sachs and Horrax's cases were not very closely related etiologically to the present case, for each had a pilonidal sinus communication with an intraspinal dermoid; nor had either of them scoliosis worth mentioning.

The finding of a lipomatous mass in the vertebral defect of a spina bifida is not unusual. Of 464 cases of spina bifida seen at the Children's Hospital, Boston,[2] 45 (including 13 cases of spina bifida occulta) had an associated lipomatous growth. Bassett [3] suggests that such fatty masses may be due to overabundant growth of the source of fat plus inclusion of rests or projections of the overabundant fat layers at the time of closure of the neural tube. He points out that they are "continuous with the subcutaneous fatty layers in the gluteal regions and nearly always penetrate the dura and are attached to the conus." His own series of lipomas of the cauda equina were all in females, which led him to wonder if the lesions might not be more than just congenital errors. That similar lesions occur in males is indicated by the report of case 34131, Massachusetts General Hospital,[4] in which the patient was a man with a lipomatous mass attached to the neural structures within a spina bifida defect. In case 1 the tissue that, grossly, was purely lipomatous proved to be part of a dysembryoplastic growth. It seems possible that a neoplastic process might be involved, even where fatty tissue alone is found in an abnormal spina bifida mass, the fat being a more or less differentiated mesodermal manifestation of a teratoid. It is perhaps significant that Bassett added to the foregoing: ". . . only in those portions of the abnormal structure adjacent to or contiguous with the defect within the neural arches, dura and conus does one encounter islands of cartilage or neural elements of no functional consequence." Perhaps the following statement from Vonderahe and Niemer (reported by Ingraham and Bailey [5]) regarding the relationship of intracranial lipomas to teratomas is applicable: "Lipomas developing some time after gastrulation contain only adipose tissue; others, developing shortly after gastrulation, possess more highly differentiated mesodermal derivatives such as bone; still others, developing before or during gastrulation, possess neuroectodermal as well as mesodermal elements. There is thus a transition from simple lipoma to the more complex teratoid tumors and teratomas." In any case, spina bifida "lipomas," though probably remotely related, are a different problem than the true intraspinal lipoma such as described by Ehni.[6] The latter is a simple lipoma lying, probably fortuitously, within an intact vertebral column. Simple subcutaneous lipomas or dermoids are found infrequently in association with spina bifida occulta, and Ingraham and Lowrey [7] mention four such patients requiring minor surgery.

Slight degrees of scoliosis are found occasionally in association with kyphosis dorsalis juvenilis due to spinal intradural cyst (Hyndman and Gerber, Cloward and Bucy, and Adelstein [8]), but scoliosis due to encroachment of dysembryoplastic tissue on developing vertebral bodies probably is not common, for it is not stressed in the literature. Ingraham and Swan [2] do not mention the incidence of scoliosis in their series of 462 spina bifida

1. (*a*) Sachs, E., Jr., and Horrax, G.: A Cervical and a Lumbar Pilonidal Sinus Communicating with Intraspinal Dermoids: Report of 2 Cases and Review of Literature, J. Neurosurg. **6**: 97 (March) 1949. (*b*) Hosoi, K.: Intradural Teratoid Tumors of the Spinal Cord: Report of Case, Arch. Path. **11**: 875 (June) 1931. (*c*) Bucy, P. C., and Buchanan, D. N.: Teratoma of the Spinal Cord, Surg., Gynec. & Obst. **60**: 1137 (June) 1935. (*d*) Forbes, J. G.: Intra-Medullary Teratoma of the Spinal Cord, St. Barth. Hosp. Rep. **41**: 221, 1906.

2. Ingraham, F. D., and Swan, H.: A Survey of 546 Cases, in Spina Bifida and Cranium Bifidum, Ingraham, F. D., editor, Cambridge, Harvard University Press, 1944.

3. Bassett, R. C.: The Neurologic Deficit Associated with Lipomas of the Cauda Equina, Ann. Surg. **131**: 109 (Jan. 1) 1950.

4. Case Records of the Massachusetts General Hospital: Case 34131, New England J. Med. **238**: 443 (March 25) 1948.

5. Ingraham, F. D., and Bailey, O. T.: Cystic Teratomas and Teratoid Tumors of the Central Nervous System in Infancy and Childhood. J. Neurosurg. **3**: 511 (Nov.) 1946.

6. Ehni, G. J., and Pugh, D. G.: Intraspinal Lipoma, Proc. Staff Meet., Mayo Clin. **19**: 513 (Oct. 18) 1944.

7. Ingraham, F. D., and Lowrey, J. J.: Occult Spinal Disorders, In Spina Bifida and Cranium Bifidum, Ingraham, F. D., editor, Cambridge, Harvard University Press, 1944.

8. Hyndman, O. R., and Gerber, W. F.: Spinal Extradural Cysts, Congenital and Acquired: Report of Cases, J. Neurosurg. **3**: 474 (Nov.) 1946. Cloward, R. B., and Bucy, P. C.: Spinal Extradural Cyst and Kyphosis Dorsalis Juvenilis, Am. J. Roentgenol. **38**: 681 (Nov.) 1937. Adelstein, L. J.: Spinal Extradural Cyst Associated with Kyphosis Dorsalis Juvenilis, J. Bone & Joint Surg. **23**: 93 (Jan.) 1941.

cases, although Ingraham and Lowrey [7] point out that, in 65 cases of occult spina bifida, 22 had as their presenting complaint "some local abnormality, such as a swelling, a bony lump or defect, a *scoliosis* or a local overgrowth of hair." Of these 65 cases, one was a 5-day-old infant with bilateral brachial palsy, which at operation showed acute angulation of the cord due to hemivertebrae. In Hosoi's [1b] case of a patient with an intradural teratoid tumor of the spinal cord (a man with spina bifida occulta and a pilonidal cyst) roentgen examination showed that "the spine was angulated at the twelfth dorsal vertebra," and it was noted that the right psoas muscle appeared to be in a state of contraction. In my case 1 an endodermal cystic portion of a teratoid had unilaterally suppressed vertebral genesis or growth, resulting in an extreme degree of scoliosis. The nature of the resultant dystrophy is perhaps explained by the fact that the vertebral bodies may at times arise from two primary centers, a right and a left. That this developmental process occurred here was suggested by the 3rd lumbar body, which consisted of hemivertebrae still ununited by bone. The degree of scoliosis per se needs little comment, except perhaps to remark on the way the child's body had adjusted to the deformity without great disability. So unstable had the vertebral column been rendered at the thoracolumbar junction by the teratoid tumor that it had virtually folded upon itself. Yet apart from some shortening of the trunk, there was little that was abnormal to be seen from the front, and the thoracic and abdominal organs, though displaced, crowded, and slightly deformed, showed no disturbance of function.

A very intimate relationship of the teratoid growth in my case 1 to the vertebral or intraspinal tissues was indicated by the finding of the cord-like structure that was traced from the endodermal cyst to an adjacent vertebra. The nature of this relationship and a "play-by-play" description of how it was attained during fetal development cannot be given; possibly the strand was not dissected to its termination at autopsy, for other cases of teratomatous cyst involving the vertebral tissues have shown attachment to the meninges. Adams and Wegner [9] described a solitary intradural teratomatous cyst that apparently was attached by a narrow stalk to the dura. Bucy and Buchanan,[1c] in reporting a case of intradural cyst directly attached to the posterior surface of the spinal cord, mentioned gleaning from the literature three cases of "teratoma" arising outside of the spinal canal but connected with its neural contents by a narrow stalk. A previously unreported case, in which the patient was a 3-month-old boy with an intrathoracic teratoma joined by a pedicle to the spinal arachnoid (case 2), is presented at the end of this paper.

Intrathoracic teratomas commonly occur in the mediastinum, usually in its anterior or superior portions.[10] In 1937, Guillery [11] reported on a 3-month-old infant with two epithelium-lined cysts in relation to the 5th thoracic vertebra: one cyst, 5.25 cm. in diameter, was situated anterior to and displaced the vertebra; the other, 1.5 cm. in diameter, was intraspinal, lying directly dorsal to the body of the vertebra, and was united to the meninges by fine fibers. The two cysts were apparently connected and were thought to be separate dilatations of the same ectopic tissue. The teratoid cyst in the 3-year-old boy in case 1, although in a sense in the posterior mediastinum, and the cystic tumor in Guillery's infant, by definition within this anatomic compartment, can hardly lay claim to more than nominal relationship with the commoner mediastinal embryomas. Both may, instead, be closely related to the intrathoracic teratomatous cyst of the patient in case 2, a relationship perhaps obscured by the great size and the intrapleural position of the latter. In all three, also, the possibility of an enterogenous or bronchogenic origin cannot lightly be dismissed. In the 3-year-old boy (case 1) the teratoid cyst was directly posterior to and contiguous with the esophagus and was lined with stratified columnar ciliated epithelium, an uncommon type found only on the upper surface of the soft palate (probably ectodermal), a portion of the larynx (endodermal), and transiently in the fetal esophagus (endodermal). In Guillery's case, the main cyst was similarly apposed to the esophagus, and though its epithelial lining was somewhat variable it was felt that the structure of the cyst wall permitted the assumption that the cysts had originated in the esophagus. The intrapleural cyst in the patient in case 2 (see below) had an enteric lining ranging from gastric-type to stratified squamous. Bracher and Koontz [12] have recently reported the case of a man with a not dissimilar mediastinal cyst, said to be of bronchogenic origin. (This man also had scoliosis due to hemivertebrae, but the spinal defect was not in relation to the cyst.) If a teratoid growth or teratoma is correctly viewed as a maldeveloped parasitic twin or offspring, probably the site of origin of parasite from autosite could as well be the esophagus or bronchus as well as the spinal meninges. On the other hand, to assume that the pathological process originated in either of these foregut derivatives in my two cases would leave unexplained the vertebral and meningeal attachments.

Just as the presence of the teratoid tumor in case 1 was unsuspected on clinical grounds, so also was the extent of invasion by its intraspinal portion unsurmised on gross examination of the tissues. Though not malignant cytologically, this part of the growth may perhaps be considered cancerous, in view of its penetration and extensive destruction of the lumbar enlargement of the spinal cord. The frequency of such a finding must be quite low, as intraspinal teratoid tumors and teratomas as a group are not common.[1] Ingraham and Bailey [5] reported 15 instances of cystic teratoma and teratoid tumor of the central nervous system in children; 8 were intracranial, 7 intraspinal; only 2 were invasive, and both of these were intracranial. Adams and Wegner [9] found in the literature seven cases of noncystic teratoma of the spinal cord, which were in some instances associated with myelodysplasia. It may be (though it seems unlikely) that what

9. Adams, R. D., and Wegner, W.: Congenital Cyst of the Spinal Meninges as Cause of Intermittent Compression of the Spinal Cord, Arch. Neurol. & Psychiat. **58**: 57 (July) 1947.

10. Berman, J. K.; Powell, J. P., and Hennessee, P. C.: Mediastinal Tumor, Am. J. Surg. **74**: 205 (Aug.) 1947. Dann, D. S.; Lockwood, I. H.; Neibling, H. A., and Walker, J. W.: A Teratoid Tumor of the Chest: Case Report, Radiology **44**: 585 (June) 1945. Fawcett, A. W.: Mediastinal Teratoma Successfully Removed by Operation, Brit. M. J. **2**: 755 (Dec. 9) 1944. Wilson, S. J., and Cares, R.: Mediastinal Teratoma, Arch. Path. **39**: 113 (Feb.) 1945.

11. Guillery, H.: Eine in die Wirbelsäule eingewachsene mediastinale Zyste (Vorderdarmzyste), Zentralbl. f. allg. Path. u. path. Anat. **69**: 49 (Dec. 22) 1937.

12. Bracher, A. N., and Koontz, A. R.: Mediastinal Bronchogenic Cyst and Klippelfiel Syndrome: Report of a Case, J. A. M. A. **150**: 1006-1009 (Nov. 8) 1952.

is interpreted in case 1 as invasion of the cord by an extramedullary teratoid tumor was in reality growth in situ and extension outward of a basically intramedullary tumor. That the myelodysplasia here encountered was not just the result of invasion by tumor is suggested in any case by the microscopic observation of communication of the central canal of the lumbar portion of the spinal cord with the subarachnoid space.

Considering the structural involvement of the child's cord by tumor, it is difficult to believe that he had no gross neurological deficit, but destruction of nervous tissue must have been less marked than infiltration and displacement, for though neurological examination was not normal there was no evident paralysis, and bladder and bowel control seemed normal. The boy could walk, records indicating that he even ran about. Whether walking began late I do not know, but it was observed that the spinal deformity increased after walking began. The disability causing him to lose his balance to the right, though clinically thought to be the mechanical result of the deformity, in retrospect must surely have had in part a paraplegic basis.

CASE 2.—A boy, aged 3 months, showed a slight scoliosis of the upper thoracic spine, with the curve quite sharp to the right and limited to about three vertebrae. Below this was a more general curve to the left, probably compensatory. There was also a congenital defect of the lower sternum.

At autopsy, a large mass was found in the upper right pleural cavity, lying alongside the vertebral column. It extended from the 1st to the 11th rib and measured 9 cm. in vertical diameter, 5 cm. anteroposteriorly, and 4 cm. transversely. The upper part of the tumor was incorporated in the root of the right lung, and on its anterior surface were grooves made by the hilar structures. The mass was fluctuant in places and proved to be composed of multiloculated cysts that communicated with one another. Its wall was variable in thickness and terminated in a small pedicle that in its narrowest portion was 2 mm. in diameter. The pedicle passed posteriorly between the 2nd and 3rd thoracic vertebrae, which were somewhat malformed. It then traversed the dura of the spinal canal by passing through a small hole and could be followed to the right ventrolateral aspect of the spinal cord, from which it seemed to arise. In the wider portions of the pedicle was a fine lumen, but the narrowest segment was composed of firm, white tissue that was quite solid.

In the main cavity, the microscopic picture was that of an enterogenous cyst. It had two well-defined muscle layers. Its epithelial lining was continuous but varied from stratified squamous or transitional to a high columnar type with folds and deep crypts like gastric mucosa. A section of cyst wall taken near the pedicle showed typical gastric epithelium with acidophil cells. Within the pedicle itself, nerve tissue, bone, and cartilage were found, and close to its intraspinal connection were small cyst-like spaces lined by a ciliated epithelium with numerous granular cells. Sections taken where the pedicle seemed to arise from the spinal cord suggested that the origin was in reality from the arachnoid membrane, the cord itself being somewhat compressed. (Whether there remains the possibility of a bronchogenic or enterogenous site of origin despite the meningeal attachment is uncertain.)

SUMMARY

The case of a 3-year-old boy with gross scoliosis due to teratoid involvement of the vertebral column is reported and discussed. The case of a 3-month-old boy with an intrathoracic teratomatous growth apparently arising from the spinal arachnoid is also recorded.

241 Albert St.

TREATMENT OF TESTIS TUMORS BASED ON THEIR PATHOLOGICAL BEHAVIOR

W. F. Leadbetter, M.D., Boston

For practical purposes the diagnosis of testis tumors depends on the patient's attention being called to the testicle owing to the development of a mass or pain. Early diagnosis depends, first, on the person's prompt interpretation of this as a danger signal worthy of a trip to his physician and, secondly, on an equally prompt reaction on the part of his physician. Disaster threatens when either the patient or his physician, or both, fail to react purposively. Unilateral undescended testicles should be removed or brought to a position where they may be palpated. I have seen three cases of tumor of an undescended testis in the last 18 months. Although a few testis tumors fail to produce symptoms before widespread metastasis has occurred, this is fortunately rare. Because lag periods between first symptoms and a visit to a physician or initiation of treatment still often exist, effort must be made to reduce delay to a minimum.

The physician must regard any firmness, irregularity, or enlargement of the testis proper as a tumor until proved otherwise, regardless of the age of the patient. A hydrocele of short duration that prevents accurate palpation of the testis should be aspirated. Surgical exposure should be advised promptly for questionable lesions. Exploration should be done through a groin incision. After occluding the spermatic cord and protecting the wound from possible contamination by tumor cells, incision of the lesion and rapid section tissue study must be done if gross inspection of the lesion does not permit diagnosis. It is certainly safer to occasionally remove a testicle for a benign lesion than to miss a tumor. Orchiectomy should be done by incision of the external oblique fascia, freeing the spermatic cord above the internal inguinal ring, with division and proximal ligation of the cord as high as possible so that no elements of the cord remain in the inguinal canal. If the tunica albuginea of the testis has been perforated by tumor with involvement of scrotal tissues, the scrotum should be widely excised. Study of the excised specimen will then allow pathological diagnosis and the formulation of a plan for further treatment after careful study for metastasis. Palpation of the abdomen usually reveals only very large

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metastasis in the retroperitoneal glands. Enlarged supraclavicular glands must be searched for. Intravenous urograms are usually of greater value than palpation by demonstrating displacement of a ureter or kidney. A roentgenogram of the chest will give information regarding lung fields and the mediastinum. Preoperative collection of urine for a test for chorionic gonadotrophic hormone, as evidenced by formation of corpora lutea of pregnancy in ovaries of virgin immature female mice, is desirable, since a positive test is indicative of a tumor derived from trophectoderm and a strongly positive test suggests the presence of true chorioepithelioma. This implies a poor prognosis and, if still positive after orchiectomy, suggests the presence of metastases.

A plan for further treatment depends on the pathological diagnosis, general condition of the patient, the

Completed left retroperitoneal node dissection. *A*, kidney is retracted upward. Dissection of the preaortic glands has been completed. From left to right dissected structures are visualized: (1) ureter, (2) inferior mesenteric artery, (3) anomalous artery and vein to lower pole of kidney, and (4) main renal artery on right side of picture. Crus of diaphragm is visualized below and at the same level. The adrenal and its associated fibrofatty capsule is seen above renal artery in upper right hand corner of picture. Dissection medially to aorta cannot be demonstrated well, but vena cava can be seen coursing longitudinally medial to aorta. *B*, kidney dropped back on lumbar muscles demonstrating renal pedicle, the ureter, the aorta, and its branches.

absence or probable or actual presence of metastases, and their location and distribution. One may decide among the following therapies: observation, deep roentgen therapy, radical retroperitoneal node dissection (if no metastases above the diaphragm are demonstrated), or radical retroperitoneal gland dissection followed by deep roentgen therapy. Treatment of testis tumors must be based on the following conditions: (1) intrinsic pathological characteristics, (2) usual pathways of metastasis, (3) response to deep roentgen therapy, (4) the likelihood of eradication of retroperitoneal lymph gland metastasis by surgery, and (5) the possibility of hormonal control or use of anticancer drugs.

PATHOLOGICAL CLASSIFICATION

A classification of tumors is necessary for purposes of grouping and estimating behavior and prognosis. Those of Friedman and Moore [1] or Lewis [2] are satisfactory, though not accepted by all pathologists. These classifications are given in table 1. It will be noted that they are basically similar and can be readily compared. Friedman and Moore feel that there are only four fundamental structural patterns, alone or in combination, in the vast majority of tumors. Lewis attempts to differentiate embryonal carcinoma into two groups, those with elements derived from trophectoderm (trophocarcinoma) and those without (adenocarcinoma). Both agree on seminoma and teratocarcinoma, or immature teratomas, that contain, besides organoid elements,

TABLE 1.—*Comparative Classification of Testis Tumors of Germ Cell Origin*

Friedman and Moore [1]	Lewis [2]
A. Seminoma	A. Seminoma
B. Embryonal carcinoma and chorioepithelioma	B. Adenocarcinoma 1. Undifferentiated embryonal 2. Embryonal 3. Embryonal papillary
C. Teratocarcinoma	C. Trophocarcinoma 1. Cytotrophoblastoma 2. Choriopapillary adenocarcinoma 3. Chorioepithelioma
D. Teratoma	D. Immature teratoma with elements of A, B, or C E. Mature teratoma with or without elements of A, B, or C

seminoma, embryonal carcinoma, or trophocarcinoma. True chorioepithelioma should probably be in a separate group because of its exceedingly malignant character, tendency to metastasize by way of the blood stream, and uniformly poor prognosis. True adult teratomas are benign but occasionally undergo malignant degeneration as indicated by Lewis. Relative frequency of each type is roughly: seminoma, 35 to 45%; teratocarcinoma, 25 to 35%; embryonal carcinoma, 20 to 30%; and teratoma, 5%.

PATHWAYS OF METASTASIS

Testis tumors, with the exception of chorioepitheliomas, usually metastasize via the lymphatics that pass upward from the testis through the spermatic cord to primary lymph nodes. Experience indicates that on the left side these are located in relation to the aorta at the level of the renal pedicle. On the right side they are located in relation to the vena cava at the point where the spermatic vein joins the cava. That this description of lymph channels is not always true is indicated by the fact that Lowry [3] found, in autopsy studies of 34 patients dying with testis tumors, retroperitoneal nodes involved only on the side opposite the tumor in three cases. Also, one of the patients, reported on in this article, with embryonal carcinoma of the left testis for which orchiectomy and left radical retroperitoneal gland dissection

1. Friedman, N. B., and Moore, R. A.: Tumors of the Testis: A Report on 922 Cases, Mil. Surgeon **99**: 573-593 (Nov.) 1946.

2. Lewis, L. G.: Testis Tumors, in Advances in Surgery, edited by W. D. Andrus and others, New York, Interscience Publishers, Inc., 1949, vol. 2, pp. 429-494.

3. Lowry, E. C.; Beard, D. E.; Hewit, L. W., and Barner, J. L.: Tumor of Testicle: Analysis of 100 Cases: Preliminary Report, J. Urol. **55**: 373-384 (April) 1946.

was done 30 months ago, with normal nodes, has recently returned with large metastatic nodes around the right renal pedicle indicating primary contralateral metastasis. This indicates that unilateral retroperitoneal gland dissection may be inadequate and that one may not rest easy just because all glands removed on the side of the tumor are normal.

Lymph channels passing to adjacent glands carry tumor cells to secondary glands, which on the left side are usually between the cava and aorta at a somewhat higher level than the renal pedicle, or to glands around the cava at the level of the right renal pedicle. Secondary glands relative to the right testis are located between the vena cava and the aorta, around the right renal pedicle, or between the cava and aorta at a slightly higher level. From these glands lymph channels join the thoracic duct behind the cava at the level of the crus of the diaphragm, and tumor cells reaching this channel pass to the supraclavicular nodes in the neck or into the venous circulation, which usually deposits them in the capillaries of the lungs. It is not clear whether the mediastinal glands are generally involved by way of lymphatic channels passing from retroperitoneal glands directly through the diaphragm, by tumor cells from the supraclavicular glands, or by the lung parenchyma.

Involvement of retroperitoneal glands below the level of primary nodes takes place by retrograde passage of cells through anastomosing lymph channels probably owing to blockage of normal efferent channels by a tumor. Primary involvement of iliac nodes seems to be the result of invasion of lymphatics in the epididymis or scrotum. Involvement of inguinal glands suggests direct involvement of scrotal tissues. Another consideration in relation to retroperitoneal gland metastasis concerns the likelihood of contralateral gland involvement from the primary nodes. Lewis [2] states, "We have noted them in only 2 patients with massive metastatic involvement." This observation was made from 192 retroperitoneal lymph gland dissections. Involvement of contralateral glands must occur much oftener, because in my series of 19 cases at least 5 had evidence of contralateral node involvement. This is further substantiated by Lowry's [3] autopsy statistics, which showed bilateral retroperitoneal node involvement in 12 of 34 cases, though these represented terminal findings (table 2).

These known facts relative to extension of testis tumors to retroperitoneal glands make it necessary to consider bilateral retroperitoneal gland dissection imperative if one is to hope for cure by surgical methods. Furthermore, the dissection must begin at a level above the renal pedicle in order to insure a margin of normal glands and lymphatics superiorly and proceeding downward to the femoral canal.

EFFECT OF DEEP ROENTGEN THERAPY

Experience has proved that seminoma is the most radiosensitive testis tumor. Because of this, deep roentgen therapy after orchiectomy is the treatment of choice. Lewis, on the basis of Friedman's experience at Walter Reed Hospital, recommends a tumor dose of 2,000 r as adequate therapy to the retroperitoneal gland areas or other metastases. This has been borne out in my experience. It would appear that seminoma, unless widely disseminated—that is, with multiple, large, widely separated metastases—can be usually cured by roentgen therapy. Lewis estimates that 95% of seminomas should be cured. Within the last few months, I have treated a patient with seminoma of the right testis who also had a large right upper retroperitoneal mass with outward displacement of the right kidney. After orchiectomy, a 2,000 r tissue dose of radiation was delivered to the entire retroperitoneum. The mass shrunk so that it could no longer be palpated. Some time after completion of therapy, the retroperitoneum was explored and a residual mass over the cava resected. No viable tumor cells were found. This seems proof positive that a 2,000 r tissue dose is sufficient to cure seminoma. It may be that some tumors are more resistant. This remains to be proved. More specific information regarding this matter seems desirable.

The response of embryonal carcinoma to deep roentgen therapy is not so predictable. Experience indicates that a 2,000 r tissue dose is, in general, inadequate for cure, though I recently treated a patient with an embryonal carcinoma and a large upper retroperitoneal mass that disappeared after administration of 2,000 r of radiation to the entire retroperitoneum. After an interval of several weeks following termination of therapy, the retroperitoneal space was explored and no sign of tumor found. All tissue removed was negative. A metastasis, which subsequently developed in the lung, also disappeared after roentgen therapy. It seems that tumors consisting of tissue derived from trophectoderm have been very resistent to deep therapy. Chorioepithelioma does not respond.

TABLE 2.—*Metastases Present in Thirty-Four Cases of Testicular Tumor (Lowry [3])*

Supraclavicular nodes	
Left side only	6
Bilateral	3
Mediastinum	7
Lungs	6
Abdominal (retroperitoneal nodes)	
Same side	17
Opposite side	3
Bilateral	12
Spermatic cord	6
Blood-borne metastasis	1

Teratocarcinoma is so resistent to radiation, at least as far as its contained organoid tissue is concerned, that deep therapy is of little value and should probably not be advised. Using 250 kv. x-ray equipment, the maximum therapy that can safely be delivered to the retroperitoneal tissues is probably somewhat less than 2,500 r. This means that deep roentgen therapy should probably be confined to treatment of seminomas and embryonal carcinomas. With more powerful equipment and higher doses of x-rays the incidence of radiation injury is considerable. Friedman's experience at Walter Reed General Hospital using large doses of radiation (3,000 to 5,000 r) to the retroperitoneum has demonstrated that a significant number of patients develop radiation injury to the stomach, large bowel, or spinal cord and this has resulted in significant mortality. He favors retroperitoneal gland dissection as the best method of treatment for tumors that are expected to be radioresistant.

RADICAL SURGERY FOR RETROPERITONEAL METASTASIS

Plans for surgical removal of retroperitoneal lymph channels and glands involved or likely to be involved by metastatic testis tumors must be based on information presented earlier concerning the pathways of extension. Seminoma and possibly some types of embryonal carcinoma, depending on much more specific information, may not need dissection of the retroperitoneal area because radiation is so effective. It is of no value in chorioepithelioma because of the likelihood of blood-borne spread; however, in dealing with radioresistant tumors (embryonal carcinomas with trophectoderm components and teratocarcinoma) it seems worth while. Statistical studies relative to cure, after retroperitoneal gland dissection, are of little value to date because deep roentgen therapy has usually been given following surgery and thus confuses the deductions drawn. If retroperitoneal gland dissection is to be evaluated properly as a curative procedure, it must be as complete as possible and deep roentgen therapy should not be subsequently given. So far surgery alone has been used as the method of treatment when only one or two involved lymph glands have been found, and a reasonable margin of normal lymphatics and glands were removed above, below, and medial to the glands involved. Furthermore, there is little likelihood of cure by any means if more than early retroperitoneal extension has occurred. Attempts at removal of massive glandular metastases, though technically possible and satisfactory, have been followed by recurrence locally or involvement of supraclavicular glands or the lungs. Retroperitoneal gland dissection in cases without demonstrable metastasis offers, of course, the best chance for success, and performed in these cases without demonstration of gland involvement it gives specific information on the status of the disease and prognosis. This is important because statistics on cure or control by deep roentgen therapy are inaccurate in that, for any given case, the presence of lymphatic metastasis is only surmised.

TABLE 3.—*Thoracoabdominal Retroperitoneal Gland Dissection*

Case No.	Pathological Diagnosis	Gland Dissection	Deep Therapy 2,000 r/ Port, Tissue Dose	Status
1	Embryonal carcinoma	Bilateral 30+ nodes	Yes	Died 30 months
2	Embryonal carcinoma	Single Right: All +	Yes	Died 2 months
3	Embryonal carcinoma	Single Left: 0	No	Living with metastasis
4	Embryonal carcinoma	Single Left: 0	No	Dying
5	Teratocarcinoma	Bilateral Right: All + Left: All +	Yes	Died 9 months
6	Teratocarcinoma	Single Right: 2+	Yes	Living and well
7	Seminoma	Single Left: 1+	Yes	Living and well
8	Teratocarcinoma	Single Right: 0	No	Living and well
9	Seminoma	Single Right: 18+	Yes	Living and well
10	Teratocarcinoma	Single Left: 1+	No	Living and well
11	Embryonal carcinoma	Single Right: All +	Yes	Living with metastasis
12	Seminoma	Single Right: many +	Yes	Living and well
13	Embryonal carcinoma	Single Right: 0	No	Living and well
14	Embryonal carcinoma	Single Left: 2+	Yes	Living with metastasis
15	Embryonal carcinoma	Single Right: 0	No	Living and well
16	Seminoma	Single Right: 0	Yes	Living and well
17	Embryonal carcinoma	Single Right: 0	Yes	Living and well
18	Embryonal carcinoma	Single Left: 0	No	Living and well
19	Embryonal carcinoma	Single Left: 0	No	Living and well

A discussion of the technical aspects of thoracoabdominal retroperitoneal gland dissection has been presented in previous publications.[4] It is felt that in the past, when carried out through an abdominal incision as described by Chevassu [5] and Hinman [6] and extensively utilized by Lewis,[2] the dissection at or above the level of the renal pedicles has been inadequate. A thoracoabdominal approach through the bed of the 11th rib affords maximum exposure and great safety and allows easy dissection of nodes as high as the diaphragmatic crura. Completed dissection on the left side is illustrated by the figure. It must be understood that a left side dissection consists of removing all the fat and fascia about the kidney, and dissection of glands about the renal pedicle, from the anterior and lateral surfaces of the aorta, and in the pelvis from about the iliac vessels. Because of the celiac axis and the inferior mesenteric artery, it is not possible to dissect the nodes between the aorta and cava from the left side except between the points of origin of these vessels, so that if more than one or two nodes are positive, a subsequent right retroperitoneal dissection is necessary. Dissection performed from the right side allows removal of the tissues around the renal pedicle, the pericaval and interaortocaval nodes, but does not allow dissection of glands on or lateral to the aorta. The Nagamatsu incision is better than an abdominal incision from the tip of the 11th rib to the inguinal area but does not give quite as good exposure as the thoracoabdominal incision for surgery just beneath the diaphragm.

I have performed radical retroperitoneal gland dissections by way of the thoracoabdominal route on 19 patients. Bilateral dissection was done twice. No death or significant complication resulted. Pathological diagnoses were seminoma in four cases, embryonal carcinoma in nine, and teratocarcinoma in six. Two patients with seminoma were operated on because the pathological diagnosis was uncertain. One was operated on, as noted previously, to determine the effectiveness of deep roentgen therapy. The remaining patient was operated on because of a tumor in an undescended testicle of several years' duration with many large glands that were dissected because the dissection appeared easy. It should be noted here that nodes with metastasis due to dissemination of seminoma are discrete and encapsulated and lend themselves well to surgery. Of the 19 patients who have been treated over a three year period, 3 are already dead and 2 are dying. Embryonal carcinoma was present in four cases (cases 1, 2, 3, and 4). Teratocarcinoma was present in one, case 5 (table 3).

4. Cooper, J. F.; Leadbetter, W. F., and Chute, R.: The Thoracoabdominal Approach for Retroperitoneal Gland Dissection: Its Application to Testis Tumors, Surg., Gynec. & Obst. **90**: 486-496 (April) 1950. Leadbetter, W. F.; Feeley, J. R., and Wheeler, J. S.: Testicular Tumors: Summarized Data and Suggested Plan of Treatment, Urol. Survey **1**: 447-482 (Dec.) 1951.

5. Chevassu, M.: Tumeurs du testicule, Thesis de Paris, 1906.

6. Hinman, F.: The Prognosis and Treatment of Tumors of the Testis, J. Urol. **34**: 72-84 (July) 1935.

CASE 1.—In this case the preoperative intravenous urogram showed medial displacement of a segment of the right midureter. At operation numerous glands were enlarged on the side of the testis tumor and contralateral enlarged glands could be felt over the aorta. Dissection of the opposite side was done later. Thirty of the glands removed from both sides showed metastatic tumor. The supraclavicular glands and the chest were normal at this time. The patient then received 2,000 r in air through each of five ports to the retroperitoneum, which was obviously inadequate. One year later an enlarged left supraclavicular gland was demonstrated and roentgenograms of the chest revealed a widened mediastinum. Radiation in doses of 2,200 to 2,500 r in air was given to these areas, with disappearance of the supraclavicular mass and diminution in the width of the mediastinal shadow. One year later he was readmitted with a lesion in the left upper lobe of the lung. A lung abscess developed and was drained. The patient died six months later, two and one-half years after beginning treatment. Autopsy revealed metastasis in the lung and mediastinum but no evidence of disease in the retroperitoneum. Although radiation therapy had been given to the retroperitoneal area, the amount was inadequate and it seems likely that the eradication of the disease in the retroperitoneal area was the result of surgery. In any case, the result, particularly in view of the extent of disease, has led to the conclusion that surgery alone may, if carefully executed, be capable of curing retroperitoneal metastatic disease from testis tumors.

CASE 2.—This patient was found at operation to have extensive metastasis to the retroperitoneal glands on the side of the testis tumor and also extensive contralateral involvement. The condition of the patient did not permit further surgery, and he died two months after the first gland dissection of his disease.

CASE 3.—This patient was found to have an embryonal carcinoma of the testis. A unilateral retroperitoneal gland dissection failed to reveal any positive glands. The patient did well for two years and then returned with slight gynecomastia and discomfort in the upper abdomen on the opposite side from the testis tumor. Intravenous urograms showed displacement of the right kidney by a mass, and chest roentgenograms revealed early pulmonary metastases. This case is extremely important, since it indicates that primary contralateral retroperitoneal gland metastases do occur without involvement of the usual primary group on the side of the tumor. For this reason it must be considered that dissection of retroperitoneal glands on the same side as the lesion may not be enough, even though all glands removed are negative.

CASE 4.—This case demonstrates that blood-borne metatasis may occasionally occur without lymph gland involvement, since this patient developed extensive visceral metastasis while no positive lymph glands were found as the result of retroperitoneal gland dissection.

CASE 5.—This patient was found to have very extensive retroperitoneal metastasis from a teratocarcinoma. Bilateral retroperitoneal lymph gland dissection was followed by prompt recurrence and death.

Table 3 shows that four patients (cases 6, 7, 10, and 14) had only one or two positive retroperitoneal glands. One of these has not been given deep therapy and is being watched hopefully. All are well at present. No evidence of retroperitoneal metastasis was demonstrated in the glands removed by unilateral dissection in cases 8, 13, 16, 17, 18, and 19. No deep therapy has been given to five of these patients. They are free from complaints for intervals of a few months to two years. These 19 cases are approximately 31% of all patients seen with testis tumors during this period (61). Twenty-eight patients with seminoma have been treated, with two deaths. Both of these patients had extensive metastatic disease. The remaining 14 cases did not have gland dissection either because the disease was considered too extensive, because gland dissection had been done elsewhere, or because it was decided to adopt conservative therapy.

If follow-up on these cases proves the effectiveness of retroperitoneal gland dissection for early metastasis and shows that negative lymph nodes generally imply absence of metastases, perhaps one of the chief advantages of retroperitoneal gland dissection, if carefully done and the lymph node sectioned carefully, will be to give an accurate prognosis in most cases and obviate the need for routine deep roentgen therapy. At present, if all nodes are negative, there is no reason for further therapy unless obvious metastases subsequently develop.

PLAN OF TREATMENT

My recommendation for the treatment of testis tumors, which must be, after all, a generalization not applicable to all cases, is as follows: prompt exploration of a suspicious lesion of the testis and orchiectomy if tumor is found, through an inguinal incision performed so that the cord is ligated above the internal inguinal ring. This is done regardless of the presence or absence of metastasis in order to allow an accurate diagnosis. Studies for metastasis may then be completed. These should include careful physical examination, chest roentgenogram, intravenous urogram, and urine study for chorionic gonadotropic hormone. Pathological diagnosis is very important and should be based on a study of multiple sections of the testis so that as much information regarding the character of the tumor can be obtained as possible.

Patients with pure seminoma without demonstrable metastasis should receive deep roentgen therapy to the entire retroperitoneal area in amounts of 2,000 r per port, tissue dose. If obvious metastases are present above the diaphragm these should be treated concomitantly, but if metastases are not demonstrable it is best to watch the supraclavicular area and lung fields carefully, not giving deep roentgen therapy to these areas unless metastases develop. Very rarely, when there is question about the pathological diagnosis, it may be best to carry out retroperitoneal gland dissection in some cases to substantiate diagnosis and determine extent of the disease. It is also possible that in cases in which seminoma develops in a remaining testis, after previous removal and treatment of a tumor in the opposite testis for which deep roentgen therapy has been necessary, further roentgen therapy for the second testis tumor will not be possible; under these circumstances one may have to rely on retroperitoneal gland dissection as the only means of treatment. I have recently seen such a case.

Embryonal carcinomas and teratocarcinomas without supraclavicular, mediastinal, pulmonary, or extensive retroperitoneal metastasis should probably be treated by unilateral retroperitoneal gland dissection. If no positive glands or only one or two glands are found no further treatment should be given. Serial chest films and intravenous urograms for a period of several years or careful follow-up will be necessary. If more than a few positive glands are present, subsequent contralateral retroperitoneal gland dissection is probably desirable, even though one cannot palpate enlarged glands on the opposite side. If numerous positive glands are found or if dissection is impossible or impractical, deep roentgen therapy in maximum safe dosage, perhaps 4,000 to 4,500 r, using the high voltage equipment, must be tried. The patient must be watched for metastases above the diaphragm and these treated by deep therapy promptly.

Chorioepitheliomas have such a completely poor prognosis that therapy other than orchiectomy seems valueless, though for a given patient one might decide otherwise, depending on the condition of the patient, the location of metastases, and the rapidity of growth. Adult teratomas are probably safely treated by orchiectomy alone, but the specimen should be carefully studied for malignant degeneration by cutting multiple sections. If questionable evidence of malignant degeneration is present, retroperitoneal gland dissection on the side of the tumor should be done.

Patients should be followed indefinitely, but it appears from a survey of the literature and my own experience that if patients live between two and three years the majority are probably cured. Close supervision, therefore, should be carried out during this three year period, at first every three months, probably later every six months, and then ultimately the patient should be seen every year. Physical examination, x-ray examination of the chest, and occasional intravenous urograms to look for displacement of the ureters or the kidneys may show early evidence of recurrence.

CONCLUSIONS

Some of the problems of diagnosis, pathological characteristics, pathways of metastasis, radiosensitivity, and therapy of testis tumors are discussed. A plan of treatment is outlined.

171 Harrison Ave.

PRESENT STATUS OF CONCEPT OF FOCAL INFECTION

George H. Coleman, M.D., Chicago

I enjoyed the rare privilege of working with Dr. Billings from 1912 on during the period of his notable clinical research on the concept of focal infection. As you know, he proposed that focal infection was a principal factor in the production of certain forms of systemic disease. In my opinion, as well as in the opinions of many others, the role of focal infection in the production of chronic systemic disease in particular will endure as Dr. Billings' most important clinical and scientific contribution to medical and dental practice. In the Frank Billings Lecture for 1938, Bierring [1] thoroughly reviewed the whole subject of focal infection. It would appear profitable however, to take inventory again and to cite many important observations and comments that have been published since that time.

Originally Dr. Billings [2] stated, "A focus of infection may be described as a circumscribed area of tissue infected with pathogenic organisms. Foci of infection may be primary or secondary. Primary foci usually are located in tissues communicating with a mucous or cutaneous surface. Secondary foci are the direct result of infections from other foci through contiguous tissues, or at a distance through the blood stream or lymph channels. Primary foci of infection may be located anywhere in the body." Very recently, Solis-Cohen [3] elaborated this concept by pointing out that "a focus of infection is bacterial and not structural" and that foci of infection are "infecting bacteria pathogenic for their host and producing toxin inimicable to him which have their habitat in a more or less circumscribed area. It is the metastasis or the toxemia or both that constitutes focal infection; the factor that determines whether a focus of infection causes focal infection is the patient's resistance; and it is the same resistance that determines the cure." Similarly, Appleton [4] states that "the development of secondary lesions traceable to a primary focus constitutes focal infection" and that any localized infection is potentially a focus of infection. Curtis prefers the term "metastatic infection" to focal infection. In 1942 Moss [5] amplified Dr. Billings' definition of focal infection with "this focus is constantly more or less infected; the infection is of a chronic nature with perhaps attacks of acute infection superimposed upon the chronic infection; bacteria or bacterial toxins constantly or intermittently are released from the foci of infection and are carried to other parts of the body where they may set up lesions of an inflammatory, degenerative or allergic nature." In recent years various workers have distinguished between "foci of infection" and "focal infection." The latter term is more inclusive and implies that there exists or has existed a circumscribed lesion or focus, that the lesion is of bacterial nature and, as such, is capable of dissemination, and that dissemination from the focus has resulted in systemic infection of contiguous or noncontiguous parts.

After an initial overenthusiasm and almost complete acceptance by general practitioner and specialist alike, there was a reaction to the concept of focal infection that may be best described as a healthy skepticism that led to much clinical and experimental research. Indeed, for a time the concept was almost abandoned. The theory suffered because too much was claimed for it; too many diseases were ascribed to it. In 1939 this skepticism was best expressed by Reimann and Havens.[6] They were of the opinion that the theory had not been proved; infectious agents were unknown and the condition of many patients whose tonsils and teeth were present was no worse than the condition of those whose teeth and tonsils had been removed. They further observed that, after removal of foci, patients often continued to suffer from the disease for which the foci were removed and that beneficial effects could seldom be ascribed to surgical procedures alone. They also pointed out that many suggestive foci of infection healed after recovery from systemic disease or when the general health was improved with hygienic and dietary measures. However, they agreed that "the concept of focal infection in relation to systemic disease is firmly established. The origin of many toxic or metastatic diseases may be traced to primary or focal areas of infection. Gonorrhea and gonorrheal arthritis,

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Because of space limitations the bibliographic references have been omitted from THE JOURNAL and will appear in the author's reprints.

furunculosis and septicemia leading to osteomyelitis, renal abscess, etc.; tetanus and other self-limiting diseases may be cited." Bloomfield [7] in 1938 regarded "the procedure (removal of foci of infection) to be now hardly more than a gesture or the remnant of a habit which enables one to do something in chronic cases in which there is so little to do." Likewise, in 1939 Cecil and Angevine [8] stated, "focal infection is a splendid example of a plausible medical theory which is in danger of being converted by its too enthusiastic supporters into the status of an accepted fact." On the other hand, in 1941 Slocum [9] considered the concept of focal infection to be of definite clinical value, although he felt it was unreasonable to expect removal of foci of infection to eliminate the fibrous end result of tissue necrosis.

Very recently (1950) Kerns [10] summarized the principal arguments for and against the focal infection concept that were previously discussed (1942) by Woods.[11] In favor of the concept are the following factors: 1. Primary foci may be found in association with secondary systemic disease, such as tuberculosis, syphilis, gonorrhea, brucellosis, and sarcoidosis, which frequently have no other cause to account for the secondary disease. 2. There is evidence of transient bacteremia in patients with primary foci and secondary systemic disease. Moreover, when a focus of infection exists, mechanical factors favor recurrence of bacteremia, e. g., pressure of the jaw muscles, compression of the tonsils in swallowing, and stresses of the prostate. 3. There is selective affinity of certain bacteria for certain tissues. 4. It is well known that exacerbations of arthritis, myositis, and iridocyclitis may follow surgical procedures on the primary focus. 5. Recognized clinical improvement may occur in the systemic or secondary disease when the primary focus is eradicated. 6. A patient may be rendered vulnerable to bacteremic episodes by lowering of his defense mechanisms. 7. Conditioning factors such as traumatized tissues, fatigue, exposure, malnutrition, anemia, avitaminosis, mental depression, and particularly disease of the leukopoietic system result in secondary disease far more readily when a focus of infection is present. For example, C. P. Miller [5] has shown that the flora of the colon can kill the host when the body defenses are lowered by radiation. 8. Some persons are more susceptible to infection than others, and it is in these especially that secondary infection takes place.

Kerns and Woods presented the following arguments against the focal infection concept: 1. Any structure or lesion containing bacteria may be called a focus. 2. The focus may be assigned an etiological role in any disease that exists in the patient. 3. It may be decided that every possible focus of infection must be removed at once even though the patient is not ill, i. e., therapeutic excesses are committed in the name of the theory. 4. Some of the favorable evidence consists of observations in a single case that might or might not be significant. 5. So-called foci are frequently found in asymptomatic patients. 6. Removal of a focus only infrequently produces cure of the secondary disease. 7. Foci usually produce local reactions. 8. Bacteremia is usually combatted by the defensive processes of the body. Failure is due to inability of the patient at the moment to cope with bacteremia when under ordinary conditions it would be eradicated.

DENTAL FOCI OF INFECTION

In 1950 Kolmer [12] classified dental foci of infection as follows: "(1) chronic gingivitis and especially pyorrhea alveolaris; (2) periodontitis with or without pockets of pus; (3) vital but infected pulps; (4) nonvital infected pulp; (5) apical infections and cysts from necrotic pulps, and improperly treated and filled root canals; (6) infected retained root tips; (7) residual infections after extractions; (8) impacted or partially erupted infected teeth; (9) infected radiculo-dental dentigerous or multilocular cysts; (10) salivary calculi with infections; and (11) chronic osteomyelitis of the jaws." In discussing dental foci of infection it is perhaps interesting to recall that in an address to medical students at McGill University in 1910, William Hunter,[13] an English physician, launched the theory of oral sepsis as a cause of disease and severely indicted American dentistry for the systemic disease engendered by gold crowns and septic bridge work. One excerpt from this address will demonstrate the animus that inspired the theory. Hunter commented dramatically, "No one has more reason to appreciate the ghastly tragedies of oral sepsis which his [the dentist's] misplaced ingenuity so often carries in its train. Gold fillings, gold caps, gold bridges, gold crowns, fixed dentures built in on and around diseased teeth, form a veritable mausoleum of gold over a mass of sepsis to which there is no parallel in the whole realm of medicine or surgery." Probably Hunter's address was unknown to Billings, since he never referred to it, although he often gave vent to the same scathing criticism of some of the dentistry of that day. Certainly the theory of focal infection furnished the dental profession with the first conclusive evidence to substantiate the contention that dentistry is a health science rather than a cosmetic craft.

The diagnosis of dental foci of infection has been enhanced because of better x-ray techniques, better interpretation of x-ray films of the teeth with particular reference to circumscribed or diffuse radiolucent areas, better understanding of pathological dental processes, and improved bacteriological techniques. Recent studies demonstrate that completely impacted teeth can often be disregarded as foci of infection. Considerable evidence has also accumulated indicating that infection of deciduous teeth is as significant from the standpoint of secondary effects as infection of permanent teeth. Recently Blayney reported that many apical granulomas result from continued low grade irritation caused by toxic material in the root canal, by mechanical injury, or by chemical action. Reestablishment of a normal bony structure and periodontal membrane as interpreted from the x-ray film is sufficient evidence of a successful result following root resection or periapical curettage. Indeed, Grossman [5] wrote, "If the root canal is rendered sterile and the canal well-filled, repair of destroyed periapical bone will take place and the pulpless tooth then need not be looked upon as a hazard to health." Periapical granulomas are usually encapsulated, but the capsule does not prevent absorption of bacteria and toxins. The capsule contains a meshwork of capillaries with direct communication between the inner part of the granuloma and the neighboring circulation.

Gingival and periodontal lesions are now regarded as a manifestation of both local and systemic disorders. They represent a borderline region that has been almost entirely neglected by physicians and given very little attention by the average dentist. Lesions of this type should be suspected and searched for. Klock and Kovnat [14] are of the opinion that the cooperation of physician and dentist in the recognition and treatment of gingival disease will aid in the eradication of many systemic ailments.

In dentistry the focal infection theory did a great deal of good as well as harm. It did good in that it brought about a reform in operative and prosthetic dentistry procedures towards smooth fillings and crown margins and sanitation about the gingiva. Also the concept of focal infection challenged the then current practice of careless devitalization of teeth and root canal filling and put the burden of responsibility on the dentist who did such work to eliminate periapical infection. On the other hand, much harm was done in that extremists went so far as to extract all pulpless teeth, even when there was no evidence of periapical disease (Leonard [15]). As recently as a year ago, an article entitled "An Evaluation of the Effect of Dental Foci of Infection on Health" appeared in the *Journal of the American Dental Association*. This was a report of a project sponsored by the Council on Dental Health of the association. It is a most significant contribution to the subject, and was prepared at the University of Michigan under the aegis of Kenneth A. Eastlick, D.D.S., with the consultation of 12 members of the University of Michigan medical and dental faculties. Today the emphasis is no longer on microorganisms and on drugs and vaccines to counteract them, but on oral hygiene. Cleanliness and freedom from irritation of the periodontal structures, maximum local vigor of these tissues, and optimal general health and nutrition of the individual as a whole are the principal measures to this end.

NONDENTAL FOCI OF INFECTION

Kolmer also offered the following classification of nondental foci of infection: chronic tonsillitis, sinusitis, nasopharyngitis, suppurative otitis media, mastoiditis, bronchitis, bronchiectasis, prostatitis, seminal vesiculitis, endometritis, cervicitis, and salpingitis, urinary tract infections, infections of the gastrointestinal tract including appendicitis and infected anal crypts, osteomyelitis, and suppurative infections of the skin. Kolmer also included secondary foci wherever established. There have been several recent reports on the gastrointestinal tract as a source of focal infection.[16] In dealing with nondental foci, the physician must frequently exercise considerable diagnostic acumen in detecting such foci and in determining their relation to systemic disease.

MECHANISMS OF FOCAL INFECTION

Foci of infection may initiate or affect the course of a malady in one or more of four ways: 1. Bacteria may be discharged from the focus onto a free surface whence, conveyed by mechanical means, they determine an extension of the disease by reinoculation. 2. Bacteria may be conveyed to distant parts of the body by way of the lymphatics or the blood stream. They may be arrested in the nearest lymph nodes, leading to lymphadenitis or even to abscess formation. If the bacteria pass this barrier, one of three things may happen: They may multiply in the blood stream. They may be conveyed alive to a suitable nidus, where they will multiply and infect the surrounding tissues. They may, by the process designated by Adami as "subinfection," produce a slow but progressive atrophy with replacement fibrosis in various organs of the body. 3. Products of bacterial metabolism may reach and damage remote parts of the body. 4. Bacteria at the focus may undergo dissolution. Dissolution products diffusing into the blood or lymph may sensitize various tissues of the body in an allergic sense, and later liberation of dissolution products may result in an allergic reaction. On the other hand, if absorption of bacterial toxins is prevented by chronic inflammatory changes or by encapsulation of the primary focus or if upon absorption the toxins are effectively neutralized by natural or acquired antitoxins, ill health is not to be expected.

Rosenow [17] in 1915, securing bacteria from patients, injected animals (chiefly rabbits) simultaneously with living cultures, corresponding heat-killed bacteria, and the filtrate of rapidly growing broth cultures. From these experiments he concluded that streptococci have elective localizing power and produce in their protoplasm and set free in broth toxins that injure electively the very tissues in which the living streptococci localize and produce lesions. This predilection of streptococci he called "elective localization." This work has not been generally accepted or confirmed by others. In 1950 Kolmer commented that it is not necessary to assume that organisms in the primary foci of infection acquire a specific affinity for this or that organ or tissue as postulated by Rosenow. Rather, it appears that factors altering the endothelium of capillaries, with reduction in circulation and anoxia of the tissues, capillary occlusion due to scarring, and reduced circulation due to trauma or inflammation, are among the factors determining the localization of bacteria from foci of infection. Under the circumstances it is not difficult to understand why in some persons with minor primary foci of infection diseases due to focal infection develop while in others with marked primary foci these diseases do not occur.

Kolmer also pointed out the following facts: "The investigations of Cavelti suggest that streptococci or their products in secondary localizations may interact with the tissues with the production of foreign antigens producing antibodies which, upon interaction with the involved tissues, produce inflammatory changes. Furthermore, it is possible that the secondary diseases of focal infection may be due to inflammatory changes resulting from the Schwartzman phenomenon, in that the soluble products of streptococci or other bacteria in the primary foci may

affect local areas of tissue in other parts of the body in such a way that they react later to the same or other bacterial products gaining access to them. . . . It is also possible that the acquired allergy to bacteria or their products in the primary foci of infection plays a role in the etiology of the secondary lesions or diseases of focal infection. If this is true one must assume that the bacteria or their products reach secondary foci by way of the blood, with local sensitization of the tissues along with or without sensitization of the skin. After this has occurred, subsequent access of the bacterial antigen by way of the blood excites allergic reactions which, as suggested by the investigations of Rich and his colleagues and others, results in the damage and even the necrosis of the sensitized cells with special reference to the endothelium of capillaries. This may result in capillary occlusion, with or without thrombosis, and the production of focal lesions due to fibrinoid degenerations, although why certain tissues or organs are selectively involved is as yet unknown."

It is generally conceded that transient bacteremias occur frequently. Organisms can and do pass from so-called foci of infection into the blood stream. Thus it has been definitely shown that hard chewing or massage of the gingivae in persons with periodontitis is followed by the finding of the mouth organisms in the blood stream. In general, bacteremia follows extraction of teeth a little more frequently when teeth have large areas of rarefaction at their root ends, as revealed in roentgenograms, or there is advanced gingivitis; and it is distinctly more frequent when more than one tooth is extracted at one sitting.

FOCAL INFECTIONS AND THEIR EFFECTS

Focal infection from primary or secondary foci may cause such effects as general debility, fatigue, malaise, anorexia, headache, excessive drowsiness, anemia, loss of weight, hypotension, and reduced immunologic response. Among the diseases that may be due to focal infection are the infectious arthritides, rheumatoid arthritis, fibrositis, fibromyositis producing lumbago, torticollis, bursitis, neuritis, subacute bacterial endocarditis, iritis, iridocyclitis, uveitis, cholecystitis and cholangitis, pyelitis and pyelonephritis, brain abscess, tuberculous meningitis and generalized miliary disease, erythema nodosum, phlebitis, and regional lymphadenitis. It is possible for any of the foregoing lesions to act as secondary foci of infection.

Regarding the etiology of rheumatic fever and particularly rheumatoid arthritis, focal infection has been a constant source of controversy. Rheumatoid arthritis is a systemic disease often accompanied by heart lesions, anemia, and elevated sedimentation rate of erythrocytes. Remissions during pregnancy and during hepatitis severe enough to produce jaundice are known to occur. Streptococcal infections of the throat, tonsils, and nasal sinuses may precede an initial or recurrent attack of rheumatoid arthritis, and dramatic improvement occasionally follows removal of a septic focus. On the other hand, often no infected focus can be located, and frequently when a focus is found and extirpated, no dramatic results ensue. Persons in seemingly perfect health may have septic foci similar in location and extent to those occurring in patients suffering from rheumatoid arthritis. Thus it is apparent that Billings' original concept of the importance of focal infection in the pathogenesis of rheumatoid arthritis is less valid than he thought. Not to be confused with rheumatoid arthritis are certain forms of arthritis that follow in close temporal relation to the development of an obvious focus of infection. These sometimes respond favorably to eradication of foci of infection, as do a number of conditions classified as nonarticular rheumatic disease. As a consequence of the work of Selye [18] and Hench, Kendall, and others many diseases of progressive nature, such as rheumatoid arthritis and several collagen diseases, have been shown to be reversible while corticotropin (ACTH) and/or cortisone are administered. To quote Hench,[19] "Whatever the immediate or future destiny of these hormones may be in the field of practical therapeutics, they already have demonstrated clearly the potential reversibility of many disease processes thought heretofore to be more or less relentlessly progressive. Thus they have given a sound basis for much hope."

Foci of infection are considered to play a part in the production of subacute bacterial endocarditis, the causative organism usually being Streptococcus viridans. These organisms are common residents of the mouth and pharynx, as well as of infected root canals. They become implanted on previously damaged rheumatic heart valves during transitory periods of bacteremia, particularly during dental procedures such as extraction of teeth. Prevention of such bacteremia by removal of foci of infection under the protection of vigorous sulfonamide or antibiotic therapy, and by similar treatment of spontaneous infection that may result in bacteremia is the physician's duty.

Recently Woods [11] pointed out that "one of the most important doctrines in American ophthalmology is the belief that certain inflammatory ocular disorders are caused by remote foci of infection." Thus focal infection must be considered in relation to various types of uveitis involving the iris, ciliary body, choroid, and other structures. Indeed the focal infection theory had great impact on the practice of ophthalmology and resulted in more thorough examination of patients, with improved classification and diagnosis of ocular disease. In addition to focal infection, other etiologic factors include tuberculosis, syphilis, leprosy, sarcoidosis, and allergic phenomena. Clinical observations and laboratory studies suggest that the mechanism of production of chronic recurrent iritis includes allergic as well as embolic factors. It has also been shown by Irons and Brown,[20] Guyton and Woods,[21] and others that after removal of foci of infection in cases of recurrent uveitis there are very few recurrences. In some of these the foci were later found to have been incompletely removed or some other cause, such as tuberculosis was present. From the practical view-

point, the wisest course in the treatment and diagnosis of ocular disease is to search for foci of infection. When such foci are found, if they are believed to be sufficiently severe or capable of impairing the general health of the patient, they should be removed to improve the general health and resistance of the patient. If there is anything in the clinical picture to suggest a relationship of the focus to the ocular inflammation, such as the outbreak of the ocular disease coincident with the "lighting up" of the primary focus, or a flare-up after injection of a vaccine prepared from the primary focus, then operative eradication of the focus is indicated. However, the routine removal of minor and symptomless foci of infection as a "cure-all" for endogenous ocular disease has no place in modern ophthalmology.

Sutton [22] regards foci of infection as a predisposing cause of some skin ailments. That focal infection plays a part in the causation of cutaneous disease is certain,[23] but the number of such diseases and the extent of their role has not been determined.

TREATMENT OF FOCAL INFECTION

The removal of a focus of infection is indicated under proper circumstances in the presence of active disease, but the removal should not be expected to cure in any but early cases. Thus Cecil points out that "an obvious focus of infection should usually be removed, provided the health of the patient permits such removal without too much risk of disaster. If the tonsils are inflamed, it is better to wait several weeks until the activity of the infection has subsided before removing them. . . . If many teeth are infected, only one or two should be extracted at a time." Recognition of a focus may be relatively easy or very difficult. The question of its eradication is extremely involved,[24] and each physician must decide on the merits of each case. In the pharynx the faucial tonsils are not the only foci of infection. Other foci are the lingual tonsils, adenoids, and lymphoid tissue of the posterior pharyngeal wall. The sulfonamides and the antibiotics are capable of eliminating persistent foci of infection in the tonsils and surrounding tissue. This was not possible 15 years ago, and tonsillectomy was usually resorted to, at least far more frequently than at present.

Antibiotics or chemotherapy are recommended before, during, and after removal of a focus in relation to the following conditions: valvular heart disease, especially of the rheumatic type; tonsillectomy when there has been a definite history of streptococcic sore throat; dental extractions when real infection is present and there is danger of bacteremia; and any condition in which the removal of a focus may have an unfavorable effect on the existing disease. Failure of the patient to improve after removal of a focus of infection may result from removal of the wrong focus, incomplete removal, or strong entrenchment of bacteria in secondary foci.

PROPHYLAXIS OF FOCAL INFECTION

In the prophylaxis of diseases due to focal infection, dentists should have a keen realization of their particular responsibility in keeping the oral cavity as free from infection as possible. This is common ground for closer cooperation between the medical and dental professions. Certainly it will always be true that diseases of focal infection may be more readily prevented by prompt extirpation or drainage of accessible primary foci than relieved or cured when once established. This is particularly true of subacute bacterial endocarditis. As stated above, it is now almost routine practice to use chemoprophylactic and/or antibiotic therapy before certain dental procedures when infection exists, as well as in relation to tonsillectomy. Such prophylactic therapy is now similarly used in relation to drainage of sinuses and gastrointestinal and genitourinary conditions for which surgery is contemplated.

Current practice in the use of antibiotic and chemoprophylactic agents for the prevention of bacteremia and focal infection is as follows: Intramuscular injection of one of the longer acting forms of penicillin is almost universally recommended. Adequate dosage of aureomycin, chloramphenicol, or terramycin may be equally effective. If antibiotics cannot be used, sulfadiazine, sulfamerazine, sulfamethazine, or mixtures of these may be used. Certainly these prophylactic measures, as well as the general use of the sulfonamide drugs and antibiotics in medical practice, has significantly decreased the incidence of disease due to focal infection.

CONCLUSION

The last 15 years have brought further clarification and understanding to the problem of focal infection. After much controversy and as a consequence of continued research and clinical study by physicians, dentists and other scientists, the concept of focal infection has become an accepted principle in the practice of medicine and dentistry.

122 S. Michigan Ave.

Induction of Labor.—Induction of labor is an important adjunct in the practice of obstetrics. Any physician who is practicing obstetrics should be thoroughly familiar with the changes that occur in the cervix prior to the onset of labor. Unless he has complete understanding of this cervical softening, effacement and dilatation, he will get himself and his patient into serious trouble in attempts at induction. Once the cervix is really favorable and the presenting part a vertex, well engaged, induction is a safe procedure. There are definite indications for this procedure in certain obstetrical complications. There are, in addition, other situations in which the indications are not so definite, but in which the well trained obstetrician may choose to perform an induction. One must consider the multipara with a history of rapid labor living a considerable distance from the hospital. When the cervix is ripe and the vertex well down in the pelvis, induction in the hospital may be the safest procedure for the patient.

It is the opinion of the authors that rupture of the membranes under proper conditions is a safe procedure and the most certain way to induce labor. Medical induction by means of pitocin or other drugs is an uncertain and unreliable method. It is less than 50% successful. The combination of rupture of the membranes and a dilute solution of pitocin given intravenously is most efficient. With a properly prepared cervix and judicious use of intravenous pitocin, labor can be induced successfully in most cases.—Benjamin Tenney Jr., M.D., and Archie A. Abrams, M.D., Induction of Labor, *Medical Clinics of North America*, September, 1952.

STUDIES ON RUBELLA IMMUNIZATION

1. DEMONSTRATION OF RUBELLA WITHOUT RASH

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and
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During the past decade rubella has been repeatedly indicted as a cause of congenital malformations in the newborn. The observations of Gregg [1] and Swan [2] of Australia followed by reports from this country [3] and Great Britain [4] have indicated that maternal rubella infection during the first trimester of pregnancy may be followed by the so-called rubella syndrome in the newborn infant. The most frequent manifestations of this syndrome have been cataracts, deafness, mental retardation, microcephaly, and congenital heart disease. Spontaneous abortions and stillbirths have also been reported to follow maternal rubella.[5] The exact incidence of the congenital malformations associated with rubella is unknown. Nevertheless, certain authorities consider the risk during the first trimester great enough to warrant therapeutic abortion. Thus, it is apparent that this very benign disease of childhood may have serious consequences if contracted during the childbearing period.

Since rubella is a mild illness and since one attack is likely to confer a lifelong immunity, many authors have recommended that girls be deliberately exposed to the disease. The Committee on Immunization and Therapeutic Procedures for Infectious Diseases of the American Academy of Pediatrics has recommended that "Girls should have rubella, wherever possible, before the childbearing period."[6] The following studies were undertaken as an attempt to evolve a practical method of active immunization; coincidentally they yielded significant information concerning the clinical picture and transmission of rubella.

EXPERIMENTAL RUBELLA IN HUMAN SUBJECTS

Inoculation of Material Obtained on First Day of Rash.—T. K., a 13-year-old white boy, was seen with a classical picture of rubella. Blood and nasopharyngeal washings were obtained from him 13 hours after the onset of rash. The washings were rendered bacteria-free by treatment with penicillin (1,000 units per cubic centimeter) and the serum was separated from the blood. Part of these materials was immediately stored at –70 C in the dry ice chest. The remainder was used fresh for transfer to human subjects, to cynomolgus monkeys, and to chick embryos.

The results of inoculation in humans are shown in table 1 and the chart. The subjects were from 1 to 4 years old and had no history of rubella. Serum from T. K. in a dose of 1 cc. intramuscularly produced typical rubella in one subject (C. R.) after a 13 day incubation period. Subinoculation of C. R.'s blood in two other subjects resulted in typical rubella on the 12th and 13th days respectively. In two adults exposed to the latter children German measles developed after incubation periods of 13 and 18 days. These findings indicated that the causative agent of rubella was present in the blood of patients during the first day of rash and that experimental rubella was contagious.

In the second subject (J. G.), who received 1 cc. of T. K.'s blood serum intramuscularly, fever (100.6 F) and enlargement of posterior occipital lymph nodes but no rash developed on the 13th day following inoculation. Five cubic centimeters of whole citrated blood obtained from J. G. was given intramuscularly to J. S., who developed typical rubella with rash on the 13th day. Inoculation of blood from J. S. into two additional subjects produced no disease. These results showed that the same agent that produced typical rubella with rash was also capable of causing rubella without rash.

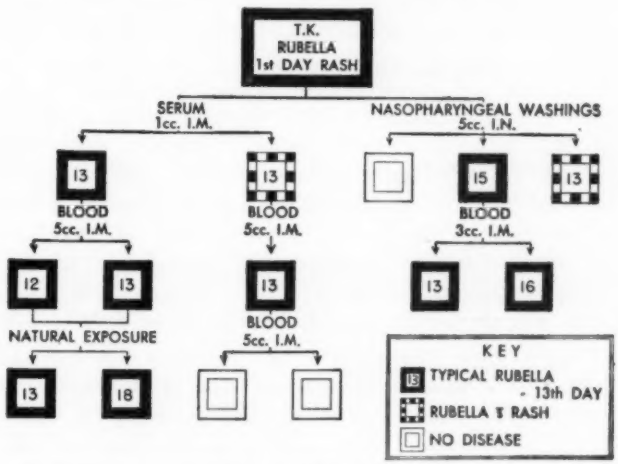

Chart showing transmission of rubella. Each square represents one subject. The number indicates the incubation period.

Nasopharyngeal washings from the original donor, T. K., were atomized and pipetted into the nose and throat of three subjects, J. N., N. K., and P. K. In subject N. K. typical rubella developed 15 days later. Blood from

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N. K. given intramuscularly to two subjects resulted in typical rubella on the 13th and 16th days respectively. T. K.'s nasopharyngeal washings produced no apparent disease in subject J. N. Subject P. K. showed fever (100.8 F), enlargement of posterior occipital nodes, and leukopenia but no rash on the 13th day. These experiments revealed that the causative agent of rubella was also present in the nasopharyngeal washings on the first day of rash.

TABLE 1.—*Experimental Transmission of Rubella by Material Obtained on First Day of Rash and Two Days Before Rash*

Material and Route of Inoculation *	Subject and Donor †	Result	Incubation, Days
Material Obtained First Day of Rash			
Blood serum, 1 cc. I. M....	C. R. (T. K.)	Rubella	13
	J. G. (T. K.)	Rubella without rash	13
Nasopharyngeal washings, 5 cc. I. N. and P. O.....	J. N. (T. K.)	0	..
	N. K. (T. K.)	Rubella	15
	P. K. (T. K.)	Rubella without rash	13
Whole blood, 5 cc. I. M...	E. T. (C. R.)	Rubella	12
	K. L. (C. R.)	Rubella	13
	J. S. (J. G.)	Rubella	13
Whole blood, 3 cc. I. M....	S. E. (N. K.)	Rubella	13
	G. O. (N. K.)	Rubella	16
	A. J. (J. S.)	0	..
	R. J. (J. S.)	0	..
Natural exposure.....	V. K. (E. T. & K. L.)	Rubella	13
	A. E. (E. T. & K. L.)	Rubella	18
Material ‡ Obtained Two Days Before Rash			
Fresh blood serum, 1 cc. I. M.....	S. M. (J. K.)	Rubella	9
	J. V. (J. K.)	Rubella	11
Blood serum, frozen 6 mo., 0.5 cc. I. M.....	C. N. (J. K.)	Rubella	10
	P. A. (J. K.)	Rubella	11
	T. B. (J. K.)	Rubella	13
	M. I. (J. K.)	Rubella	10
Nasopharyngeal washings frozen 6 mo., 5.0 cc. I. N. and P. O.....	S. V. (J. K.)	0 §	..
	R. L. (J. K.)	0	..
	F. C. (J. K.)	0	..
	J. C. (J. K.)	0 §	..
	A. M. (J. K.)	0	..
	D. M. (J. K.)	0 §	..

* I. M. = intramuscularly. I. N. and P. O. = intranasally and by mouth.

† The donor's initials are in parentheses.

‡ Material was obtained from patient J. K. two days before the rash of rubella developed. Frozen material was stored at —70 C in a solid carbon dioxide storage cabinet.

§ Rubella developed in these three subjects following natural exposure to subjects C. N., P. A., T. B., and M. I. The incubation period was 15 to 18 days.

All of the above experiments were performed with fresh blood and washings obtained on the first day of rash. Subsequently, material stored at a temperature of –70 C for nine months was used for active immunization of an 18-year-old girl (E. B.). She received blood intramuscularly and washings by gargle and intranasal instillation. On the 13th day following inoculation she developed a low-grade fever, posterior occipital and posterior auricular lymphadenopathy, and a generalized maculopapular eruption. The rash faded in three days and the illness was typical of rubella in all respects. Thus, it was shown that the agent was preserved in the dry ice chest at –70 C for at least nine months.

Inoculation of Materials Obtained Two Days Before Rash.—Subsequently, blood and nasopharyngeal washings were obtained from a patient (J. K.) two days before the rash of rubella developed. At the time these materials were collected she had a temperature of 100.6 F and markedly enlarged posterior auricular and occipital lymph nodes. The blood serum and washings were used to inoculate 12 subjects. Part of this material was administered in the fresh state; the remainder was stored at –70 C and was used six months later.

The results of the inoculations in the 12 subjects are shown in table 1. The children were from 2 to 6 years of age and had no history of rubella. Fresh serum from J. K. in a dose of 1 cc. intramuscularly produced typical rubella in two subjects (S. M. and J. V.) after incubation periods of 9 and 11 days respectively. Four additional subjects each received 0.5 cc. of the same serum that had been stored for six months. All four developed typical German measles following incubation periods ranging between 10 and 13 days. These findings indicated that viremia was present two days before the onset of rash.

TABLE 2.—*Clinical Aspects of Experimental Rubella*

Subject	Maximum Temperature, F	Rash *	Lymph Node Enlargement *	Leukopenia *
C. R.	100.4	+	++	0
J. G.	101.6	0	+	0
P. K.	100.8	0	++	++
N. K.	99.6	++	+	++
E. T.	101.6	+++	+++	0
K. L.	100.4	++	+	+
J. S.	99	++	+	0
S. E.	99.4	++	0	0
G. O.	99.8	++	++	0
C. N.	99.4	+++	+++	–
P. A.	99.6	+++	++	–
T. B.	99.2	+	+	–
M. I.	99.4	++	+++	–

* +++ = marked; ++ = moderate; + = minimal; 0 = none; – = not done.

The nasopharyngeal washings from the same donor (J. K.) were thawed after being stored at –70 C for six months. After treatment with penicillin (500 units per cubic centimeter) and streptomycin (100 μg per cubic centimeter) this material was sprayed with a no. 15 De Vilbiss atomizer into the nose and throat of six subjects. No clinical evidence of rubella developed in any of these children. The fact that at least three of these subjects were susceptible to rubella was established by their subsequent contraction of German measles following natural exposure to subjects C. N., P. A., T. B., and M. I. These negative results indicate that either virus was not present in the nasopharyngeal washings two days before rash (at a time when viremia was present), or virus failed to survive the six month storage period in dry ice.

CLINICAL ASPECTS OF EXPERIMENTAL RUBELLA

In general, the experimental disease was indistinguishable from naturally acquired rubella. The incubation period, however, was somewhat shorter, ranging between 9 and 16 days, with an average of 12 days. The pertinent clinical manifestations exhibited by 13 patients with experimental rubella are listed in table 2.

Fever, when present, was low grade and subsided within 24 hours. Eight children had temperatures less

than 100 F, three had 100.8 F and two had 101.6 F. There was no relation between the height of the temperature and the severity of the eruption. The rash, a generalized maculopapular eruption, appeared on the face and neck first; then it spread to the trunk and finally to the extremities. The more extensive eruptions subsided after three to five days; the milder ones cleared up in one to two days. Two of the patients had no rash, two had a minimal rash, six had a moderate rash, and three had a marked maculopapular eruption.

The lymph nodes most commonly involved included the posterior auricular, occipital and cervical group. Lymphadenopathy was first noted four to five days before the eruption appeared. The nodes then increased in size, reaching a maximum at the height of the rash. Subsequently, they gradually subsided over a two week period. One patient had no enlargement of the lymph nodes; in five they were minimally enlarged; in four they were moderately enlarged; and in three they were markedly enlarged.

Serial blood counts were performed on the first nine patients. Six had a normal number of leukocytes and three had a relative leukopenia. All of the children were asymptomatic and required no therapy. The experimental disease was much milder than the common cold. No complications were encountered.

ATTEMPTED TRANSMISSION TO ANIMALS

Six cynomolgus monkeys received known positive serum and washings (from T. K.) intramuscularly, intraperitoneally and intranasally. They were then observed closely for the development of a rash, lymphadenopathy, and relative leukopenia. None of the animals showed any evidence of infection.

Attempts to transfer positive rubella serum to chick embryos also failed. Inoculation of the chorioallantoic membranes of embryonated eggs produced no gross lesions. After six blind passages a saline suspension of the chorioallantoic membranes was prepared and given by inoculation to six presumably susceptible subjects. No apparent infection was detected in any of them.

TEST FOR HEMAGGLUTININS

The property of hemagglutination was sought for, using known positive serum (from J. K.), which was added to suspensions of human type O, sheep, and chicken red cells. Separate mixtures were made at pH 6.5 and 7.0 and inoculated at room temperature and at 2 C. No hemagglutination was observed.

COMMENT

Our studies confirm and extend the observations by Hiro and Tasaka [7] and Anderson,[8] on experimental rubella in human volunteers. We found the causative agent in the blood and nasopharyngeal washings of rubella patients on the first day of rash. It was also detected in the blood but not in the nasopharyngeal washings of one patient two days before the rash. The incubation period ranged from 9 to 16 days. The course of the experimental disease and the character and distribution of the rash in no way differed from naturally acquired rubella. The illness was extremely mild, causing much less discomfort than the common cold.

We were unable to demonstrate the agent in nasopharyngeal washings that were obtained two days before rash and stored at –70 C in the dry ice chest for six months. This finding suggested that either the virus did not survive storage for six months, or that the virus was not present in the nasopharyngeal washings at this prerash period. Our experience with blood and nasopharyngeal washings obtained on the first day of rash and given to subject E. B. indicates that the agent is still viable after being stored at –70 C for nine months. Also, Anderson [8b] has recently reported that washings containing the virus could be preserved at the above temperature for at least two years. Therefore, it seems reasonable to assume that the virus was not present in the nasopharyngeal washings two days before rash at a time when it was found in the blood.

Attempts to transfer the agent to cynomolgus monkeys were unsuccessful. Anderson [8a] too, was unable to confirm Habel's [9] observations on the successful transfer of rubella to rhesus monkeys and embryonated eggs.

The most significant finding of our studies was the observation that the same causative agent that produced typical rubella with rash also produced rubella without rash. The phenomenon of rubella without rash has been suspected on epidemiological grounds for many decades. These experiments, however, represent the first direct proof of its occurrence. The observation raises a very important practical question. Would an inapparent rubella infection acquired during the first trimester of pregnancy have the same deleterious effect on the fetus as that which is associated with the typical infection? At the present time one can only speculate on the answer to this question because the manner in which rubella causes congenital malformations is unknown. If the viremia were in some way concerned with the process, then it is conceivable that the "rubella syndrome" in the infant could occur in the absence of clinical manifestations of rubella during pregnancy.

Our findings and those of Anderson [8a] point the way toward practical methods of deliberate infection and active immunization of girls before the child-bearing period. At the present time, however, there are definite hazards connected with this procedure. The evidence that experimental rubella is just as contagious as the naturally acquired form indicates that the uncontrolled introduction of this disease into the community may possibly increase the danger to pregnant women. Another hazard is the potential danger of transmitting infections other than rubella. This can be minimized by rigid screening of donors and adequate treatment of washings with antibiotics.

SUMMARY

Studies that were undertaken to evolve a practical method of active immunization against rubella yielded the following information: 1. The causative agent of rubella was present in nasopharyngeal washings and blood

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8. Anderson, S. G.: (*a*) Experimental Rubella in Human Volunteers, J. Immunol. **62**: 29-40, 1949; (*b*) Epidemiological Aspects of Rubella, M. J. Australia **2**: 389-390, 1950.

9. Habel, K.: Transmission of Rubella to Macacus Mulatta Monkeys, Pub. Health Rep. **57**: 1126-1139, 1942.

obtained from patients during the first day of rash; it was also present in the blood obtained from one patient two days before rash. 2. Inoculation of these materials in susceptible persons produced typical rubella following an incubation period ranging from 9 to 16 days. 3. Experimental rubella was contagious; it produced the typical disease in susceptible persons following natural exposure. 4. The agent could be preserved in the dry ice chest at −70 C for at least nine months. 5. The same agent that caused typical rubella with rash was also capable of causing rubella without rash.

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CONTINUOUS PROCAINE BLOCK OF PARAVERTEBRAL SYMPATHETIC GANGLIONS

OBSERVATIONS ON ONE HUNDRED PATIENTS

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The functional relationship between the sympathetic nervous system and many disease syndromes has been clearly established. In many instances the exact nature of this association is not definitely known; that is, imbalance or disturbed activity of the sympathetic system is not an etiological factor. Yet, interruption or cessation of this activity results in remission, amelioration, or cure of the disease syndrome. The vast accumulation of experimental and clinical evidence relating to the beneficial effects of sympathetic interruption in peripheral vascular diseases, hypertension, post-traumatic painful syndromes, disorders of abdominal viscera, and hyperhidrosis has led investigators to search for nonoperative methods of sympathetic denervation.[1] This is of particular importance, since many of these conditions respond favorably to temporary interruption of nervous impulses. At present there are three principal methods of achieving sympathetic interruption: surgical ganglionectomy, chemical block of the paravertebral ganglions by direct infiltration, and pharmacologic interruption with adrenolytic or ganglion blocking agents. It is the purpose of this report to present the results obtained in 100 patients in whom continuous procaine block of the paravertebral ganglions was carried out. It has been thought advisable to preface the discussion of technique and results by a brief review of the physiological basis of sympathetic interruption and a survey of those clinical entities in which procedures accomplishing this have been successful.

PHYSIOLOGICAL BASIS FOR INTERRUPTION OF SYMPATHETIC ACTIVITY

The sympathetic nervous system is an integral component of the homeostatic mechanism of the human organism. It fulfills this role through a variety of mechanisms and pathways, but primarily, as a major factor in regulating body heat, it is responsible for the continuing variations in the capacity of the peripheral vascular bed. The functional capacity of the vascular bed is also responsive to a variety of other stimuli: infection, exercise, stress, operation, and trauma; and, again, this is mediated through sympathetic pathways, either by way of reflex arcs or as a result of central cerebral stimulation.

This vasomotor regulatory function of the sympathetic nervous system constitutes its principal function in the healthy patient. Nerve pathways extend through the arterial trunk down to the smallest arterioles and, in addition, extend to the entire venous system, so that both afferent and efferent vascular distributing trunks are controlled and balanced.[2] Vasomotor activity is constant, and responsiveness is delicately adjusted to minor changes in external environment. Both vasoconstriction and vasodilatation are sympathetic functions, although it is probable that the latter applies particularly to arterioles of skeletal muscle.[3] As a result, the normal, uninterrupted flow of sympathetic impulses provides for proper temperature control and adequate variation of blood flow to satisfy local demands, whether these be the normal physiological demands of basal function or the altered demands resulting from local trauma or infection. This latter mechanism has been termed hemometakinesia by Ochsner and his associates.[4]

Sympathetic vasoconstrictive activity may be classified as normal, hyperactive, or disturbed, and in each group certain indications for interruption of this activity may exist. It may be desirable to interrupt normal activity to an extremity in order to provide for a locally increased volume flow of blood. However, since the vasoconstrictive mechanism is so delicately attuned to local stimuli, this situation rarely exists. The principal indication in our experience for the interruption of normal sympathetic activity is as a preliminary measure in preparation for surgery on major peripheral arteries. It may be debated whether the smaller arteries and arterioles in the extremities of patients with arteriosclerotic obliterative disease are normally innervated. We prefer to consider these cases as examples of hyperactivity.

The commonest indication for sympathetic interruption is hyperactivity resulting from local stimuli. Clini-

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From the Departments of Anesthesiology (Drs. Betcher and Bean) and of Surgery (Dr. Casten), Hospital for Joint Diseases, and St. Clare's Hospital (Dr. Casten).

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4. De Bakey, M. E.; Burch, G.; Ray, T., and Ochsner, A.: The "Borrowing-Lending" Hemodynamic Phenomena (Hemometakinesia) and Its Therapeutic Application in Peripheral Vascular Disturbances, Ann. Surg. **126**: 850, 1947.

cally, one encounters excessive vasoconstriction in the various acute obliterative diseases of arteries and veins, with or without infection, and in the chronic obliterative arterial diseases.[5] Local pathological disturbances (anoxia, infection, trauma) set up a constant bombardment of sympathetic centers and result in a massive outflow of vasoconstrictive impulses. Depending upon the extent, duration, and nature of the local disease, either permanent or temporary interruption is indicated. Altered or disturbed vasomotor activity, which is manifested locally by varying degrees of temperature changes, is defined as the irregular transmission of constrictive and of dilatatory impulses to the vascular tree of an extremity, with these impulses often existing simultaneously in the same extremity. This phenomenon has been observed most frequently by us in conjunction with pain phenomena and will be discussed with the reflex dystrophies. We have, however, observed this interesting phenomenon as the only manifestation of disturbed sympathetic activity (namely, as a postherpetic state), and, since pain and disturbances of function have been absent, we have classified this as a disturbance of vasomotor activity.

The second principal function of the sympathetic system that deserves clinical consideration is the transmission of pain impulses. The transmission of such sensory impulses from the abdominal or thoracic viscera by way of sympathetic pathways has been thoroughly established, but the exact delineation of such pathways in the extremities, in man, has not been as satisfactory. Kuntz and Farnsworth,[6] Threadgill,[7] and Langworthy [8] have produced confirmatory evidence, but the burden of proof rests on the response of patients suffering from posttraumatic painful syndromes. Neither the hypothesis advanced by Doupe, Cullen, and Chance [9] nor that of Livingston [10] explains satisfactorily the prompt relief of pain following sympathetic interruption in these patients. It is our opinion that afferent pain impulses, as well as proprioceptive afferent stimuli arising in smooth muscles, are transmitted over sympathetic pathways as axon reflexes and through higher centers. This, we believe, is verified by ample clinical evidence.[11]

The third function of the sympathetic system deserving brief mention is the sudomotor activity.[12] Clinically, this is reflected in the specific response of hyperhidrosis to sympathetic denervation and to the utilization of sweating patterns to delineate the extent of denervation when carried out for other conditions.[13] (A summary of the functions of the sympathetic nervous system is presented in table 1.)

CLINICAL INDICATIONS FOR INTERRUPTION OF SYMPATHETIC ACTIVITY

The principal indications for temporary or permanent interruption of sympathetic activity have been presented in a previous report by one of us.[1] Essentially, our present purpose is to outline the principles governing the selection of the method of interruption. In our experience the use of sympatholytic or ganglion blocking drugs has been of little or no value, and we shall confine the discussion to the choice between surgical ganglionectomy and paravertebral procaine block of selected ganglions, either intermittent or continuous. Since we are concerned, in this report, with the continuous paravertebral method, no reference will be made to interruption of splanchnic or visceral pathways.

Complete and lasting sympathetic denervation is best accomplished by surgical ganglionectomy of desired segments of the paravertebral chain. In the lumbar chain the results are excellent, and, in selected cases, upper dorsal ganglionectomy is also extremely successful. In the upper dorsal chain, however, anatomic variation of outflow level, crossed fibers, accessory ganglions, and regeneration phenomenon continue to reduce the percentage of complete and lasting favorable results.[14] Nevertheless, for those conditions that are progressive or sustained because of persistence of the local stimulus, surgical ganglionectomy is definitely indicated. The principle, therefore, underlying the utilization of surgical denervation is: persistence of local causes (traumatic, metabolic, anoxic, pathological), with sustained and continued accentuation of sympathetic outflow. In this group we include all chronic arterial obliterative diseases, reflex sympathetic dystrophy (type 1), hyperhidrosis, and visceral pain syndromes.[15]

Temporary interruption of sympathetic activity is indicated in those patients in whom it is possible to remove or subdue the exciting local cause before irreparable damage to tissues has ensued and before the hyperactivity or disturbed activity of the sympathetic system has become irreversible. In this category are included the acute obstructions to arterial continuity due to laceration of a vessel, followed by suture; to embolus removed by embolectomy; and to contusion, spasm, or infection. Obviously, should these factors result in permanent obliteration of arterial flow, surgical sympathetic interruption may become necessary if collateral circulation is inadequate. It is true, moreover, that sympathetic ganglionectomy is a very intense stimulation for the development of collateral circulation.[16] Also in this category are the patients with acute thrombophlebitis, the phlegmasia alba dolens, or, in many instances, the acute, superficial thrombophlebitis occurring in varicose veins.[17] In reflex sympathetic dystrophy (type 2),[18] surgical denervation is rarely necessary, while, in type 3, therapy is purely prophylactic and is therefore temporary. (Clinical indications for interruption of sympathetic activity are outlined in table 2.)

CONTINUOUS PARAVERTEBRAL PROCAINE BLOCK

Extension of the field of usefulness of temporary interruption of sympathetic activity has emphasized the inadequacies of the two methods in general use prior to

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1949: (1) repeated procaine infiltration of selected paravertebral ganglions and (2) chemical ganglionic blocking agents. The first method presents several disadvantages: the short duration of interruption, the necessity for repeated needle punctures, and the presence of a period of beginning sympathetic activity followed by a period of normal or increased activity, unless blocks are performed as often as every three or four hours. Furthermore, the full effect of sympathetic denervation of an extremity may not become apparent unless this is maintained continuously for a period of several days. This is particularly true in patients with reflex sympathetic dystrophy in whom pain is associated with disturbed function.[18] In many persons with peripheral arterial obliterative disease, relief of vascular spasm and opening up of new collaterals constitute a synchronous and progressive process.[19] A single procaine block of short duration may therefore be extremely misleading as a guide for further therapy and, as such, has been discontinued in many clinics.[20]

TABLE 3.—*Effect of Sympathetic Nerve Block on Patients with Peripheral Vascular Disease*

Disease	No. of Cases	Duration of Block, Days	Result of Therapy: Excellent*	Good†	Poor‡
Thrombophlebitis, acute	4	6 to 14	4	0	0
Thrombosis, popliteal vein	1	5	1	0	0
Peripheral arterial disease	4	3 to 8	0	4	0
Thromboangiitis obliterans	3	6 to 7	0	2	1
Embolism (arterial)					
Popliteal	2	4	0	2	0
Brachial	1	9	0	0	1
Frostbite	1	11	0	1	0
Total	16	..	5	9	2

* Effective block: complete subsidence of symptoms.
† Effective block: temporary relief; further therapy necessary.
‡ Effective block: no effect on symptoms or progress of disease.

In our experience the use of chemical blocking agents has not been successful in providing complete sympathetic blockade. Dose schedules necessary for full local interruption result in numerous distressing side-effects of a systemic nature. Further, results are unselective and inconstant, and rarely, even with large doses, is complete interruption of sympathetic activity obtained; nor can the duration of effect be effectively predicted.[21] Finally, these agents are valueless in the treatment of the reflex sympathetic dystrophies.[1]

In 1949 Thomason and Moretz [22] reported on the establishment of continuous blockade of the paravertebral sympathetic ganglions. They inserted a Tuohy catheter in the region of the selected sympathetic ganglions and injected procaine solution through the catheter at varying time intervals. Prior to this report, continuous sympathetic blockade had been attempted by Hingson and co-workers,[23] who utilized the spinal intradural approach; by Smith and Rees,[24] who advocated continuous and prolonged spinal anesthesia; by Ruben and Kamsler,[25] who inserted a catheter through the sacral hiatus; and by Curbelo,[26] who used a catheter technique in a peridural approach. These methods have, in common, the dangers associated with spinal anesthesia, principally infection and neurological sequelae. The paravertebral approach as we now use it has neither of these dangers and is simple, selective, accurate, and persistent. Blockade may be prolonged for days or weeks, the patient may be ambulatory, and injections are easily accomplished by a nurse.

20*a*. White, J. C.: Progress in Surgery of the Autonomic Nervous System, 1940-1942, Surgery **15**: 491, 1944.
22. Thomason, J. R., and Moretz, W. H.: Continuous Lumbar Paravertebral Sympathetic Block Maintained by Fractional Instillation of Procaine, Surg., Gynec. & Obst. **89**: 447, 1949.

TECHNIQUE OF CONTINUOUS PARAVERTEBRAL SYMPATHETIC NERVE BLOCK

The technique of establishment of continuous paravertebral procaine block of selected sympathetic ganglions requires the following basic equipment: 25 gage needle, 80-mm. 22 gage needle, 25-mm. 18 gage needle, 16 gage Tuohy needle with Huber directional point, 3½ French Tuohy catheter and ureteral adapter, 10 cc. syringe, 2 cc. syringe, test tube, towels, gauze, towel clips, sponge forceps, and skin antiseptic solution, as well as 1% procaine, all of which are properly sterilized.

The patient is placed in the prone position with a pillow under the chest or abdomen, depending on the site of the injection. This will accentuate the bony landmarks and is most comfortable for those patients having an extremity in a plaster-of-paris boot. After suitable preparation and draping of the skin, the 22 gage needle is placed at the level of the desired sympathetic ganglion and 3 cc. of 1% procaine injected as a test dose. After five minutes the efficacy of the block is determined, and, if satisfactory, the Huber point needle is introduced alongside the first needle and its point brought down to the same plane. The catheter is then threaded through the Tuohy needle, which is simultaneously withdrawn, followed by the guide needle. The catheter is now fixed to the skin with adhesive tape. The ureteral adapter is attached to the free end of the catheter and placed in a sterile test tube, which is also conveniently fixed to the skin of the patient.

Our approach to specific ganglions has been made at the level of T_8 for interruption of the sympathetic chain to the upper extremity and at L_2 for denervation of the lower extremity. Previous technical studies with opaque radiographic material have shown that the anesthetic agent diffuses at least one vertebral segment above and one below the catheter tip with the patient in the horizontal position. Thus, optimal results may be obtained with the catheter in the positions described. Seven cubic centimeters of 1% procaine solution is instilled through the

TABLE 4.—*Effect of Sympathetic Nerve Block on Patients with Reflex Sympathetic Dystrophy, Type I*

Dystrophy	No. of Cases	Duration of Block, Days	Result of Therapy: Excellent*	Good†	Poor‡
Post-traumatic					
Left upper extremity	4	3 to 8	0	3	1
Right upper extremity	3	9 to 10	0	3	0
Postherpetic, lower extremity	2	7 to 10	0	2	0
Total	9	.....	0	8	1

* Persistence of relief of pain, hyperesthesia, and sweating after block discontinued.
† Adequate and sustained relief of symptoms for duration of block.
‡ No apparent relief; effective block.

catheter immediately and followed by 10 cc. of 1% procaine solution at four hour intervals. Ambulation is encouraged wherever possible. As prophylaxis against possible infection around the catheter, procaine penicillin is given daily by the intramuscular route. Obviously, an aseptic technique must be maintained for the instillation of the procaine, as it would be for injection of any type. There is only one specific contraindication to this method of therapy, and that is the presence of generalized infection in the tissues at the site of proposed injection. We no longer consider the use of anticoagulant therapy as a bar to the use of paravertebral injection.

TABLE 5.—*Effect of Sympathetic Nerve Block on Patients with Reflex Sympathetic Dystrophy, Type 2*

Dystrophy	No. of Cases	Duration of Block, Days	Result of Therapy: Excellent*	Good†	Poor‡
Lower extremity, no known injury	6	2 to 14	5	1	0
Lower extremity, following fracture, old	5	4 to 12	5	0	0
Post-traumatic pain, swelling, limitation of motion, upper extremity (no fracture)	3	3 to 9	2	0	1
Intractable pain, postoperative status, old	5	5 to 7	0	4	1
Shoulder-hand syndrome	2	4 to 10	0	2	0
Phantom limb and stump pain	5	7 to 22	0	4	1
Total	26	.....	12	11	3

* Effective block: complete and persistent relief of symptoms and return of function.
† Effective block: relief of symptoms; little or no effect on function or incomplete symptomatic relief.
‡ Effective block: no symptomatic relief or functional improvement.

GENERAL RESULTS OF NERVE BLOCK

The results obtained from continuous paravertebral sympathetic nerve block in this series of 100 patients are presented in tables 3, 4, 5, and 6. (A summary of these results is given in table 7.) This study was undertaken to provide information relative to certain distinct but interrelated problems, and the results were evaluated accordingly. The problems may be stated as follows: 1. Does continuous paravertebral procaine block provide continuous, uninterrupted, adequate, and specific interruption of sympathetic impulses? 2. Has this method sufficient merit to warrant advocacy of its routine use in preference to simple or repeated procaine blocks? 3. Is there sufficient justification for the use of continuous sympathetic block as a prophylactic and therapeutic method in patients with reflex sympathetic dystrophy (types 1, 2, and 3) and in patients in whom at the time of injury or surgery the development of such a syndrome may be anticipated?

Results in each patient were carefully observed and analyzed on the basis of objective and subjective criteria. Objectively, the usual criteria employed to determine the extent and adequacy of sympathetic interruption were utilized: elevation of peripheral skin temperature, abolition of sweating, increase of minute volume flow of blood as determined by plethysmography, development of Horner's syndrome (in upper dorsal ganglion blocks), the abolition of reflex vasomotor phenomena, and subsiding edema. Subjectively, relief of ischemic pain, increase of walking tolerance, disappearance or amelioration of causalgic pain, and increased functional capacity are the best criteria of satisfactory sympathetic interruption. In addition, careful and repeated observations were made at various intervals to determine the duration of blockade with each procaine injection and to check the continuing efficacy of the repeated injections. Since it was considered particularly desirable to avoid periods of escape or rebound of sympathetic activity once the optimum period of action of a single injection was determined, spot checks, using the above objective test, were performed at frequent but irregular intervals. Results of these observations were again correlated with subjective impressions. Finally, in the group of patients with reflex sympathetic dystrophy, the results obtained in type 2 patients after institution of continuous block were compared with findings prior to block, and in type 3 cases the results were controlled with a comparable group of patients who received no therapy directed at interruption of sympathetic activity.

The results of the continuous paravertebral procaine blocks were gratifying. By careful observation it was soon noted that almost invariably the duration of effect following the injection of 10 cc. of 1% procaine was from three to four hours. From the third to the fourth hour in some patients a slight return of sympathetic activity was observed. This was usually manifested by minor fluctuations of local skin temperature, by sweating in response to local heat, and by return of slight to variable pain. In over 80% of the patients, however, at the end of the four hour period no detectable evidence of sympathetic activity was present. On this basis, a routine was established of injecting procaine every four hours. Catheters were left in place from 2 to 26 days. Complete abolition of sympathetic activity was maintained throughout this entire period, and this was the most consistent and impressive observation. Many patients insisted on retaining the catheters after removal was advised, since relief of symptoms was so effectively maintained. Only two local complications occurred: One was pain at the site of catheter insertion and the other a slight skin irritation and infection in two patients at this site. Neither complication was troublesome, and both subsided immediately after withdrawal of the catheter.

TABLE 6.—*Effect of Sympathetic (Prophylactic) Nerve Block on Patients with Reflex Sympathetic Dystrophy, Type 3*

Dystrophy	No. of Cases	Duration of Block, Days	Result of Therapy*: Excellent†	Good‡	Poor§
Ankle fusion	10	3 to 18	9	0	1
Knee fusion	3	6 to 21	2	1	0
Hip fusion	2	4 to 23	0	2	0
Wrist fusion	2	10	2	0	0
Fractures, simple					
Closed reduction	4	6 to 16	4	0	0
Open reduction	6	7 to 8	6	0	0
Fractures, compound	5	3 to 7	2	3	0
Saucerization for osteomyelitis	3	11 to 20	1	2	0
Midthigh amputation	2	4 to 14	0	2	0
Tendon transplant or repair	5	5 to 15	4	1	0
Nerve repair or transposition	3	5 to 10	2	1	0
Skin grafting with pedicle	4	17 to 26	2	2	0
Total	49	.....	34	14	1

* This group compared with comparable group of 50 control cases; results are relative, not absolute.
† Complete pain relief; no edema; increased circulation; early ambulation or motion; accelerated healing.
‡ No analgesics necessary; minimal edema; some evidence of increased circulation and earlier functional return.
§ No apparent relief.

RESULTS IN SPECIFIC CLINICAL CONDITIONS

Having established the efficacy of the continuous method, it remained to be seen whether this procedure was more beneficial than repeated blocks and whether, in certain categories, it might replace surgical sympathectomy. The essential workability of the continuous block was established in patients listed in table 3. This group provided the most suitable patients on whom the various methods for determining extent, duration, and completeness of sympathetic interruption could be used. Obviously, clinical improvement was not obtained in every case, since, in some, even surgical denervation was not beneficial. Despite this, we did obtain satisfactory evidence in these patients that continuous paravertebral block was actually and thoroughly efficacious in providing complete and continuous interruption of sympathetic activity to a selected area.

The second large group of patients in whom sympathetic interruption has proved of benefit is the group with reflex sympathetic dystrophy. Under this classification are grouped such entities previously described as true causalgia, minor causalgia, post-traumatic vasomotor disorders, Sudeck's atrophy, post-traumatic osteoporosis, traumatic angiospasm, chronic traumatic edema, and reflex nervous dystrophy. In another publication [18] we have classified these entities into three principal groups according to causation, severity and nature of pain, extent of accompanying vasomotor disturbance, and restriction of function. In following this classification, we observed that in type 1 patients, in whom pain was severe, lancinating, almost continuous, and unrelated to function and in whom the etiological factor of nerve injury was constantly present, the results of continuous block approximated those of surgical sympathectomy only for as long as the blockade was maintained. In this series, when symptoms recurred, a repeat continuous block was instituted; and if symptoms again recurred, surgical sympathectomy became necessary. In patients classified as type 2 (pain less severe, causation less specific and not necessarily involving nerve trauma, and functional disability marked), the results were equally satisfactory while the block was continued and, in general, more persistent after discontinuing the injections. It was possible, during the course of the block, to encourage active motion and to increase the functional range of passive motion. In the lower extremity, walking was tolerated well, whereas, before the block, patients walked only with difficulty because of aggravation of pain. In this group, also, the most encouraging subjective improvement was noted, and many patients insisted on replacement of the catheter following withdrawal. The most striking beneficial result of the continuous block in this group was the ease with which functional exercise could be instituted and the impetus that this gave to the rehabilitation of these patients. Type 3 represents perhaps a more debatable indication, but to us it was one of the most important developments of this study. We have been impressed by variations in response by patients to operations of almost comparable magnitude, particularly in cases involving the extremities. In some, convalescence was slow and return to normal functional activity was retarded by excessive pain on motion or even while at rest. The combination of excessive postoperative pain, delayed functional return, and vasomotor instability has constituted an entity that we believe merits intensive therapy.[18] In these patients (table 6) the so-called prophylactic continuous block was instituted.

While this study was being conducted, a roughly comparable group of patients was observed in whom no direct therapy directed toward abolishing sympathetic activity was instituted. The results obtained by continuous sympathetic block were exceedingly satisfactory and, in general, when compared to this control group, were as follows: marked decrease in postoperative pain, much earlier functional rehabilitation, and absence of signs of sympathetic vasomotor hyperactivity. In this group a most careful attempt was made to provide continuous and unrelenting interruption, and in every case all test methods indicated that this was achieved. Admittedly, interpretation of results in this group is difficult because of difficulty in securing adequate controls and because of the subjective nature of the findings. Nevertheless, to us this constituted the most satisfactory group of cases and the one in which was established the definite superiority of the method of continuous paravertebral procaine block, as herein presented.

SUMMARY AND CONCLUSIONS

The physiological and clinical basis for interruption of sympathetic activity to designated areas is presented, and an evaluation of the principal methods for achieving selective denervation, permanent or transient, is made. The technique of a method of continuous paravertebral procaine ganglionic block is given in detail, and the results of the use of this method in 100 patients are critically analyzed. It is concluded that this method is preferable to the use of chemical adrenolytic or ganglion blocking agents and to the simple or intermittent type of procaine block. In many cases the continuous block method may replace surgical sympathectomy. However, criteria are presented for selection of patients for permanent or temporary interruption.

1435 Lexington Ave. (28) (Dr. Betcher).

Carcinoma of Rectosigmoid.—Anterior resection with re-establishment of continuity of the bowel by means of end to end anastomosis would seem to be indicated in cases of carcinoma of the lower part of the sigmoid and, less often, in cases of carcinoma of the upper part of the rectum, when at least 2 cm. of normal sigmoid or normal rectum distal to the lower border of the tumor can be removed. . . . Relatively few lesions in the upper part of the rectum can be satisfactorily resected by this method. For the most part, the operation under consideration is intended for lesions at or near the pelvic peritoneal reflection. . . . If a lesion is said by a proctologist to be 10 cm. from the anal margin, in most instances there is good reason to hope that anterior resection, with re-establishment of continuity of the bowel can be carried out. It is well, however, to mention here that carcinoma at or immediately proximal to the peritoneal reflection, if a patient is short and obese, may not lend itself to anterior resection followed by anastomosis, whereas a similar lesion in approximately the same segment of bowel, if a patient is slender, may be adequately removed by anterior resection. Many factors, then, make such a type of resection possible or impossible.—C. F. Dixon, M.D., Carcinoma of the Rectosigmoid and Upper Part of the Rectum: Indications for Anterior Resection and Anastomosis, *American Surgeon*, October, 1952.

CLINICAL NOTES

INFECTIOUS MONONUCLEOSIS WITH GUILLAIN-BARRÉ SYNDROME

REPORT OF A CASE

John S. Garvin, M.D., Chicago

Recently there have appeared several reviews of the neurological complications of infectious mononucleosis.[1] The commonest complication is that of a lymphocytic (serous) meningitis or meningoencephalitis. The rarer complications include neuritis and polyneuritis of the Guillain-Barré type. Silversides and Richardson were able to collect from the literature seven cases of the Guillain-Barré type of polyneuritis with infectious mononucleosis. Subsequent to that review there have appeared case reports by Kløvstad and Vinje [2] and Graham, Schwartz, and Chapman.[3] Following is the report of another case, bringing the total number of cases of the Guillain-Barré type of polyneuritis associated with infectious mononucleosis to 10. Of the total, four were fatal.

An 18-year-old university student was admitted to the Illinois Neuropsychiatric Institute on Jan. 1, 1951, with a history of many upper respiratory infections since the beginning of the fall term. About Dec. 23, 1950, he noticed that his legs felt somewhat weak and his muscles were stiff and aching. On Dec. 25 his feet felt as though they were asleep. The next day he could not bend over to put his shoes on. He began to have generalized headaches, and on Dec. 29 he noticed that he was having difficulty using his hands. There was also a "clammy feeling" in the right hand and numbness of the lips. He was admitted to a hospital in Elgin, Ill., where a spinal fluid examination was reported to show a high protein content and no cells. He was then transferred to I. N. I.

Examination revealed a normally well-developed, well-nourished white man, with a temperature of 98.6 F, pulse rate 88, respirations 28, and blood pressure 130/102 mm. Hg. He was lethargic and had slurred speech. There was moderate inflammation of the pharynx and moderate hypertrophy of the tonsils. The anterior cervical, axillary, and inguinal nodes were enlarged, rather soft, and not tender. The liver and spleen were not palpable. There was moderate tenderness of the muscles of the extremities.

Neurological Examination.—There was left ptosis and slight weakness of lateral gaze bilaterally. The corneal reflexes and sensations of the face were objectively normal; however, there was severe weakness of the right masseter with deviation of the jaw to the right. There was minimal bilateral facial weakness, including the eyelids, on voluntary and emotional movement. The gag reflex was diminished; however, swallowing was normal and the uvula rose in the midline. The tongue protruded to the right, and the right half of the tongue was wrinkled and furrowed. There was normal power in the shoulder, intercostal, abdominal, and diaphragmatic muscles. All movements of the arms were weak, the right being weaker than the left. The patient was unable to move his wrists, and the only finger movement was slight adduction of his left thumb and slight flexion of the left fingers. All muscles in the lower extremities showed decreased power. All movements of the thighs were moderately weak except for extension, which was only slightly diminished. Flexion of both legs was moderately weak. Extension of the left leg could not overcome gravity and the right just barely so. There was severe weakness of dorsiflexion of the left foot and moderate weakness of the right, with moderate weakness of plantar flexion bilaterally. There was hypalgesia and hypesthesia of the right hand and forearm to just below the elbow. There was hypalgesia and hypesthesia of the left hand and along the ulnar portion of the forearm to about the middle. There was absence of vibration, joint and position sensibility, and two point discrimination in the fingers bilaterally. Paresthesia and hyperesthesia for pinprick and light touch in the feet were evident. Vibration, position and joint sensibility, and two point discrimination were normal. All deep reflexes were absent. Abdominal and cremasteric reflexes were absent. The response to plantar stimulation was flexion.

Laboratory Reports.—Urinalysis was within normal limits. On Jan. 1, 1951, laboratory studies showed the following results: hemoglobin 16.5 gm. per 100 cc.; red blood cell count 6,600,000; white blood cell count 15,800, with 89% lymphocytes (immature), 7% monocytes, and 7% neutrophils. On Jan. 3 Wassermann and Kahn tests were negative; the white blood cell count was 12,800, with 81% lymphocytes, 1% monocytes, 14% neutrophils, and 4% stab forms. Examination of the cerebrospinal fluid showed: pressure 200 mm. of water, clear xanthochromic fluid, 3 lymphocytes, Pandy's test 3+, protein 900 mg. per 100 cc., sugar 45 mg. per 100 cc., and gold curve 0000002322. On Jan. 5 there was a heterophil agglutination titer of 1:224. The diagnosis of Guillain-Barré syndrome associated with infectious mononucleosis was made.

Progress in Hospital.—He was given thiamine chloride 100 mg. twice daily orally and chloramphenicol (chloromycetin®) 500 mg. every four hours. His temperature continued at 98.6 to 99.6 F rectally. Within two days the weakness of the right masseter had improved greatly, so that there was no deviation of the jaw. The tongue protruded in the midline, and the right side was not furrowed. Ptosis of the left eyelid was only minimal. The blood pressure continued to be elevated, varying between 130/98 and 165/135. A repeat neurological examination on Jan. 6 showed only questionable left ptosis. There appeared to be minimal bilateral facial weakness. There was still motor weakness of the extremities, more pronounced in the right arm than in the left and more pronounced in the left leg than in the right with peripheral involvement the greatest. Position and vibration sense was still abolished in the hands and wrists, and perception of vibration was reduced in the feet.

On Jan. 10 a macular rash developed, which was believed to be a dermatitis medicamentosa; consequently, all medication was discontinued. Neurological examination revealed no evidence of cranial nerve involvement. There was gradual improvement of muscle power in all extremities. A repeated blood count on Jan. 10 revealed 7,000 white blood cells, with 74% lymphocytes, 2% monocytes, 20% neutrophils, 2% eosinophils, and 2% stab forms. The patient continued to improve, and on Jan. 17 he was able to stand and take a few steps. A repeated spinal fluid examination revealed 13 lymphocytes and 4 red blood cells. The Pandy test showed 1+, and the total protein level was 276 mg. per 100 cc. Gradual improvement continued, so that on Jan. 23 he was able to perform all movements; however, there was some weakness in practically all muscle groups. The internal and external hamstring reflexes were obtained with reenforcement, and both ankle jerks were obtained without reenforcement. The other deep reflexes and superficial reflexes were still absent. He received physiotherapy consisting of whirlpool baths,

From the Department of Neurology and Neurological Surgery, University of Illinois College of Medicine at the Neuropsychiatric Institute.

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2. Kløvstad, O., and Vinje, T. L.: Mononucleosis Infectiosa Med Symptomer Fra Sentralnervesystemet, Nord. med. **43**: 795-796, 1950.

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massage, active and passive exercise, and muscle reeducation along with electrical stimulation while in the hospital. He was discharged on Jan. 28.

When reexamined on May 5, 1951, he had no complaints and had just passed a physical examination for the United States Naval Academy. He was receiving no medication and had discontinued physiotherapy when he left the hospital. Neurological examination now was completely normal in all respects. All reflexes were present and equal, although the reflexes in the upper extremities were moderately diminished. Spinal fluid examination revealed a pressure of 190 mm. of water (patient tense) and crystal clear fluid with a total protein level of 51 mg. per 100 cc.

SUMMARY

Recently attention has been focused on neurological abnormalities in patients with infectious mononucleosis. Reported here is a case of Guillain-Barré syndrome with such an etiology. In addition to the peripheral polyneuritis, this patient had involvement of the 5th, 7th, and 12th cranial nerves and severe involvement of deep sensibility in the upper extremities with little impairment in the lower. There was a complete recovery with no residual five months after onset.

8 S. Michigan Ave.

CORTICOTROPIN IN EOSINOPHILIC GRANULOMA

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and
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The effect of corticotropin (ACTH) on circulating eosinophils and certain collagen diseases led us to use it in a case of eosinophilic granuloma. We hoped that it would cause a regression of the lesion by its action on the proliferating collagenous stroma and on the masses of eosinophils contained therein. Since we have found no report in the literature of the effect of the drug on this disease, we are reporting this case.

REPORT OF A CASE

A 32-year-old farmer came to the clinic May 2, 1949, because of a swollen jaw. He gave a history of pain in the left posterior part of the lower jaw in September, 1948, which had led to removal of the molars in that region. One month later the gums had become painful, had broken open, and had drained. In December, 1948, the right lower molars had been removed, and this procedure was followed by prolonged drainage. Except for a mild cough, productive of yellowish-white sputum, there were no other symptoms.

In the past history the only event of importance was fracture of the right leg in 1943 in a farm accident. This resulted in nonunion, so that a graft operation had to be performed in 1945, which produced a good result. The patient's father had died from cancer of the jaw. There was no personal or family history of tuberculosis. The patient was a stocky, well-nourished person, who denied any pain and was apparently not greatly concerned about his condition. The face was swollen over both horizontal rami of the mandible, the right side showing evidence of acute cellulitis. Physical examination was otherwise normal.

A roentgenogram of the jaw showed a large area of destruction in the horizontal ramus of the right mandible, compatible with a diagnosis of neoplasm. A chest roentgenogram revealed diffuse, fine foci of infiltration and fibrosis scattered throughout both lung fields. Roentgenograms of the rest of the skeleton showed no defects other than slight flattening of the bodies of the 11th and 12th thoracic vertebrae, and a grafted, healed fracture of the right tibia and fibula. The erythrocyte sedimentation rate was 15 mm. in 45 minutes (Westergren). The leukocyte count was 12,000 per cubic millimeter with 60% neutrophils and 40% lymphocytes. A first strength, tuberculin test (purified protein derivative) was mildly positive. All other tests were negative or normal. These included urinalysis, hemoglobin and erythrocyte determinations, tests for serum calcium, phosphorus, alkaline phosphatase, albumin, and globulin, sputum smear for acid-fast organisms, and histoplasmin skin test. Penicillin was given for the cellulitis, and the jaws were wired to prevent fracture, which was imminent.

On June 2, 1949, biopsy of the right mandible yielded tissue of an inflammatory appearance, found on microscopic examination to consist of a collagenous stroma infiltrated with large mononuclear cells and eosinophils, compatible with a diagnosis of eosinophilic granuloma. In September, 1949, the patient experienced pain in the right side of the chest after heavy lifting but had no other symptoms. Roentgen examination of the chest one week later showed slight pneumothorax at the right apex and the generalized mottling as before. Subsequent roentgenograms showed disappearance of the pneumothorax but no change in the lung fields.

In January, 1950, the right mandible again became swollen and started to drain. Penicillin therapy was reinstituted, and, although the lesion improved clinically, roentgen examination showed progressive destruction during the next several months. On June 12, 1950, the remaining mandibular teeth were removed, together with material from the right mandibular molar and bicuspid areas, consisting of a yellowish-gray cheesy substance incorporated in granulation tissue. Microscopically this was seen to consist of anastomotic masses of fat-filled cells, chronic inflammatory cells, nodular foci of eosinophils, a few giant cells, granulation tissue, and large areas of necrosis. The tissue showed chronic granulomatous inflammation compatible with a diagnosis of eosinophilic granuloma.

Because the bone lesion had recurred or persisted after roentgen therapy and the lung lesions had not changed, it was decided to institute a course of corticotropin. On Aug. 29, 1950, a trial dose of 15 mg. administered intramuscularly caused a four-hour drop in the direct eosinophil count from 429 to 132. Therapy was continued with the administration of 15 mg. every 6 hours for 14 days. No undesirable effects were observed, but no apparent benefit resulted; the mandibular lesion progressed to complete fracture on Sept. 22. Roentgen therapy was reinstituted and seven treatments given to the mandible from Oct. 7, 1950, to Feb. 27, 1951. During this time the jaw became stable, apparently by fibrous union, and, on the latter date, roentgen examination showed marked bony regeneration in the rami and body of the mandible bilaterally. By September, 1951, the mandible was judged firm enough to warrant preparation for dentures. During the entire observation, frequent rechecks of the erythrocyte sedimentation rate and complete blood cell count showed normal conditions, except for a mild leukocytosis and occasional increase of eosinophils up to 7%. The roentgen appearance of the chest has remained unchanged, but the patient feels well in every respect and has no respiratory symptoms.

From the departments of internal medicine and oral surgery, Carle Hospital Clinic.

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2. Weinstein, A.; Francis, H. C., and Sprofkin, B. F.: Eosinophilic Granuloma of Bone: Report of Case with Multiple Lesions of Bone and Pulmonary Infiltration, Arch. Int. Med. **79**: 176 (Feb.) 1947.

3. Ackerman, A. J.: Eosinophilic Granuloma of Bones Associated with Involvement of Lungs and Diaphragm, Am. J. Roentgenol. **58**: 733 (Dec.) 1947.

4. Dickson, D. D.: Eosinophilic Granuloma of Bone with Diffuse Pulmonary Involvement, California Med. **69**: 51 (July) 1948.

5. Nash, F. P., and Smolik, E. A.: Diffuse Pulmonary Infiltration Accompanying Eosinophilic Granuloma, J. Missouri M. A. **47**: 414 (June) 1950.

COMMENT

Arnold,[1] in 1946, was probably the first to recognize lung lesions associated with eosinophilic granuloma of the bone. He reported on a patient with eosinophilic granuloma of the clavicle accompanied by mottling throughout both lung fields, which, he suggested, was probably due to the same process. Soon after, similar cases were reported by Weinstein, Francis, and Sprofkin,[2] Ackerman,[3] Dickson,[4] and Nash and Smolik,[5] but with no histological study of the lung lesions. In 1950, Adams and Kraus [6] reported the autopsy findings in a case in which roentgen examination had shown enlarged hilar shadows, radiating linear infiltration, and mottling throughout both lung fields. The lungs were found to contain numerous nodules up to the size of a hen's egg, well defined, spherical, opaque, and light gray. Similar lesions were found in the kidneys and skin, but none were found in the bones. Microscopically they were characterized by obliterating arteritis, extensive necrosis, and heavy eosinophilic infiltration. They regarded the process as an atypical eosinophilic granuloma. In 1951, Farinacci, Jeffrey, and Lackey [7] performed thoracotomies on two patients with prolonged respiratory symptoms, in whom roentgenograms showed mottling of the lung fields. No osseous lesions were noted. The lungs contained numerous firm, yellow or gray white nodules, measuring 0.4 to 1.5 cm. in size, microscopically identical to eosinophilic granuloma of bone. It is of interest that this differs markedly from von Meyenburg's description of the microscopic appearance of the lesions of Löffler's syndrome.[8] In our patient, no attempt was made to perform a biopsy of the lungs, but with roentgen findings in the chest comparable to those reported above, associated with typical bone lesions, it seems likely that the lungs are involved in the same process.

It has become apparent that treatment of the bone lesions with thorough curettement or roentgen therapy usually gives satisfactory results. The response of lung lesions to roentgen therapy has been less satisfactory, the majority showing little or no change. The eventual effect on pulmonary function is not known, but extensive collagenization and fibrosis could cause severe pulmonary embarrassment. This occurs in Hand-Schüller-Christian disease [9] and would seem likely to occur in the closely related eosinophilic granuloma.

It was partly in hope of preventing this eventuality, in addition to treating the jaw lesion that had recurred or persisted after roentgen therapy, that corticotropin was given. Rationale for its use was based on the knowledge of its effect on certain collagen diseases and its ability to suppress circulating eosinophils. The patient received 60 mg. daily in divided doses, for 14 days, a dosage that at the time was considered maximal. It has since been found that larger doses may be of benefit in certain diseases even after failure with doses of the magnitude that we used. Thorn and others,[10] for example, originally reported that corticotropin was of no benefit in sarcoidosis and later obtained improvement in the same cases with larger doses.[11] Hence, it is entirely possible that early administration of larger doses of corticotropin or cortisone over a longer period of time may have produced a beneficial result in the case under discussion. The failure of Blahd, Levy, and Bassett [12] to obtain improvement of lung lesions with cortisone in a case of Hand-Schüller-Christian disease does not militate against this. As they found on thoracotomy, the lungs were already in an advanced state of fibrosis. Indeed, the debility shown by their patient emphasizes the need for prevention. More vigorous roentgen, corticotropin, or cortisone treatment, within the limits of safety, as early as possible in the course of this disease would seem justifiable.

SUMMARY

A case is reported of eosinophilic granuloma of the jaw with lung lesions probably due to the same pathological process. Corticotropin in the dosage used exerted no demonstrable effect on either the jaw or the lung lesions. Roentgen therapy in adequate dosage promoted healing of the jaw lesions. Although the pulmonary lesions virtually cause no symptoms, the eventual outcome of such lesions has not been completely assessed, either in this case or in others. It would seem justifiable to institute vigorous roentgen, corticotropin, or cortisone therapy early in the course of the disease in an effort to prevent the potential pulmonary morbidity.

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12. Blahd, W. H.; Levy, M. S., and Bassett, S. H.: A Case of Hand-Schüller-Christian Syndrome Treated with Cortisone, Ann. Int. Med. **35**: 927 (Oct.) 1951.

The Vagotomy Controversy.—The two most important causes of the differences in opinion regarding the value of vagotomy with gastro-enterostomy in the treatment of duodenal ulcer are a. Differences in selection of cases for operation; b. Differences in the technique of operation. . . . "Side effects" which have been attributed to vagotomy are in reality complications of an improperly functioning gastro-enterostomy. If the gastro-enterostomy is properly placed and constructed there should be no prolonged gastric retention and transitory retention should not occur in over 3% of the patients subjected to vagotomy and gastro-enterostomy. . . . Vagotomy with gastro-enterostomy affords as much protection against recurrent ulceration as a three-fourths gastric resection. More radical gastrectomies result in a lower incidence of recurrent ulceration but cause an intolerably high incidence of nutritional complications for which there is no effective treatment. . . . The safety of vagotomy with gastro-enterostomy, the absence of side effects when the gastro-enterostomy is constructed properly, and the fact that failures are still correctible by gastric resection commends vagotomy with gastro-enterostomy as the standard treatment for complicated duodenal ulcer.—G. Crile Jr., M.D., An Analysis of the Vagotomy Controversy, *Annals of Surgery*, October, 1952.

COUNCIL ON FOODS AND NUTRITION

Dr. Frank H. Krusen, Chairman of the Council on Physical Medicine and Rehabilitation, was asked by the Council on Foods and Nutrition to discuss the role of physical medicine in the treatment of obesity. He has considered baths, massage, and other techniques as well as faddism in weight reduction.

JAMES R. WILSON, M.D., *Secretary.*

PHYSICAL MEDICINE AND OBESITY

Frank H. Krusen, M.D., Rochester, Minn.

Were it not for the fact that there is much misunderstanding concerning the role of physical medicine in the management of obesity there would be no need whatever for a discussion of this topic. Actually the value of any type of physical treatment in reducing the weight of the person who is overweight is so slight that it can be said that physical medicine plays an extremely minor role in the correct therapeutic management of obesity.

Insofar as reduction of weight is concerned, physical agents are capable only of increasing the caloric output or the fluid output of the human body and they are not capable of diminishing caloric input. Because any increase of output of fluids must promptly be compensated for by an equal input of fluids and because increasing the caloric output is extremely difficult and often dangerous, the limitations of physical medicine in reducing bodily weight immediately become apparent.

Many nonmedical "weight-reducing parlors" or "slenderizing salons" exploit various combinations of baths, massage and exercise. Usually such plans for reduction of weight depend basically on a special low-calorie diet which is introduced somewhat surreptitiously in conjunction with the highly touted physical procedures.

BATHS

An innumerable variety of baths have been recommended as being helpful in assisting the person, who is overweight, to reduce. Hot baths, cold baths, hot showers, cold showers, Scotch douches, Turkish baths, Russian baths, steam baths and electric light cabinets have all been recommended for this purpose.

All of the hot baths can produce a transient loss in weight through the production of profuse perspiration. Loss of weight from sweating may exceed 2 pounds in an hour when a patient is placed in any one of these hot baths. However, such reduction in weight by loss of water from the tissues does not indicate that there has been decrease in the amount of adipose tissue and the body will soon regain enough water to make up for this transient dehydration. My associate, Gordon Martin,[1] has pointed out that theoretically it would be necessary for a person to take 370 hot baths in which on each occasion the bodily temperature was raised 2° F for one hour in order for him to lose 1 pound of adipose tissue. He has added that according to certain experimental evidence, a slightly greater increase in the metabolic rate could result from the simple act of chewing gum. "Of course if gum chewing is used as a reducing measure, the gum should be free of sugar and calories."

Stimulating cold baths, Scotch douches and needle showers produce a mild increase in tone of muscles with a slight increase in metabolic rate. Although they produce a feeling of well-being, the increase in metabolic rate is so slight and of such short duration that it is not sufficient to produce any noticeable loss of weight.

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2. Rosenthal, C., cited by Pemberton, R.: Physiology of Massage, in Handbook of Physical Therapy, ed. 3, Chicago, American Medical Association, 1939, pp. 78-87.

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MASSAGE

Massage has been defined as the manipulation of the tissues of the living human body, either manually or by means of mechanical devices. Strangely, it does not seem to be well known, even among members of the medical profession, that no form of external manipulation is capable of removing adipose tissue from a particular region of the body. Massage will not reduce local deposits of fat. Massage will not increase muscular strength. Massage will not cause any significant change in the basal metabolic rate.

When Carl Rosenthal [2] attempted experimentally in the laboratory to produce a change in the amount of fat present in animal tissues and to remove fatty deposits by means of vigorous massage, he found that it was impossible to cause any reduction in the amount of fat locally even though the massage was sufficiently heavy to produce multiple hemorrhages which could be observed in histologic sections of the adipose tissue.

Martin [1] has commented that if heavy vigorous manual massage is employed in the treatment of obesity, the only person who is likely to lose even a little weight is the one doing the massage and not the misguided obese subject. Martin concluded that at best massage can be considered a pat on the back or a reward for the person who has been working diligently at his diet and "at its worst, massage by gadgets provides a spectacular approach to the gullible obese person exploited by numerous quacks and charlatans whose claims for effective reducing by this method are completely without scientific evidence." There is no scientific proof whatever that massage of any type can be effective as a reducing measure.

"SPOT REDUCING" (TREATMENT OF REGIONAL ACCUMULATION OF FAT)

Innumerable glib claims are made for procedures and devices which are supposed to be effective in "spot reducing" of adipose tissue. Most obese people are especially concerned about collections of fat in certain specific regions of the body. Men seem particularly concerned about reducing their waistlines and women seem chiefly concerned about reducing their hips. Both sexes often seem anxious to eliminate a "double chin." Charlatans have exploited this concern to the utmost and unscrupulous manufacturers of drugs, proprietors of beauty parlors and physical culture clubs, makers of "slimming creams," and manufacturers of chin straps, reducing belts, massaging devices, rollers and electrical vibrators have produced almost unlimited claims concerning the value of their devices for "spot reducing."

While the value of nearly all of these devices is absolutely nil, some careful medical observers believe that massage may be of some value after much fat has been removed from the entire body, including the affected region, by appropriate dieting. At this time, massage may aid in restoring elasticity to the sagging skin. However, gentle manual massage is more satisfactory than any of the mechanical devices, rollers or vibrators. The only effective way of reducing fat in local regions of the body except when extremely large amounts of fat are occasionally removed by the heroic measure of surgical excision is to follow a program of general reduction of weight by remaining on a low-calorie diet.

QUACKERY IN WEIGHT REDUCTION

While quackery in conjunction with the employment of physical agents for the treatment of obesity is rampant, quackery is by no means limited to physical agents. Reducing pills, vitamin supplements, slenderizing creams, laxatives, candies to be taken just before eating, one-food diets, "Hollywood diets," seven-day and fourteen-day diets of bizarre ingredients have all been widely exploited.

Oliver Field,[3] in discussing "fooling the fat," has described creams, lotions and bath powders which were advertised as miracle agents for reducing weight. He has mentioned also various systems and salons where "rhythmic passive exercise" is claimed to give you the benefits of "active exercise without any of the tiring ill effects." One elaborate string of "slenderizing salons" employs such equipment as the "Roaler Massager," the "Back Ring Roller," the "Leg Roller" and the "Modified Slendro Massager," as well as the "Rollo Massage Chair."

It can be commented that careful clinical observation by skilled physicians does not support the claim that any of these

mechanical procedures will remove deposits of fat. There is no "easy way" to reduce fat and there is no scientific evidence whatever to indicate that adipose tissue can be made to disappear by massage or by any other means from one region of the body without its disappearing in comparable amounts from other regions.

CONCLUSIONS

Proper reduction of the intake of food is the only logical method of reducing weight. The person who desires to reduce weight must be reasonably intelligent, strongly motivated to reduce, have sufficient will power to remain on the low-calorie diet, and realize the importance of keeping his weight down. Baths, massage and exercises are only of value in a secondary role to maintain tone and elasticity of tissues which have been deprived of much adipose tissue following the reduction of weight by proper dieting. Mechanical gadgets and "spot reducing" appliances and exercises are utterly useless for removal of regional accumulations of fat.

Furthermore, exercise is of extremely limited value in causing a general reduction of weight because it is so much more difficult to lose weight by increasing the caloric output by exercise than it is to decrease the caloric input by reducing the intake of food. It has been estimated that the average man would need to climb to the top of the Washington Monument (555 feet) 48 times in order to expend 4,320 calories and thus lose 1 pound of fat. Theoretically the average person would need to walk at least 36 miles at the rate of approximately 3 miles per hour to lose a pound of fat. The amount of vigorous exercise required to achieve any appreciable reduction in weight is so great that such a regimen is not only very difficult but it may also be dangerous because it throws additional strain on the already overtaxed cardiovascular system of the obese person.

When fat people, as they often do, say "Oh doctor, I eat like a bird," my friend Edward Rynearson,[4] often replies, "Yes, like a vulture." However, fat persons often eat excessively without realizing that they are doing so. This tendency is now becoming better recognized and in a recent article in a popular magazine,[5] it is pointed out that it is true that if most fat people ate what they say they eat, they would be thin. The article continues by stating that fat people who claim they "eat like birds" are not deceitful. Either they eat little compared with what they would like to eat or they fool themselves. "In recent clinical tests a number of overweight people were put on a diet of what they said they ate." They proceeded to shed weight at once.

While psychiatric problems often contribute to the desire to overeat, I am convinced that many adults whose work forces them to lead sedentary lives and who in their youth were athletic and developed the habit of heavy eating gain weight simply because when they were more active physically, they learned to like large quantities of food. They overeat simply because they thoroughly enjoy fine food.

Such people usually do not possess a normal appetite mechanism. Large amounts of exercise in their youth started them on a habit pattern of excessive eating and their pleasure in eating exceeds so completely their normal feeling of assuagement of hunger that usually they are not even aware that their caloric intake is going far above their actual requirements for energy.

In the normal person, the appetite mechanism functions so that a feeling of fullness or satiation comes when he has had just enough food to fill his requirements for energy and to keep his reserves of fat at a constant normal level. Then he stops eating. But this is not so with the type of person I am describing. He really enjoys good food so heartily that his level of satiation is almost unbelievably high. Even after an enormous meal he can still consume with gusto several after-dinner chocolate mints, coffee with cream and sugar and sweet liqueur and he will still be ready to munch some salted nuts while drinking a highball a little later in the evening.

For such persons, reduction of weight is, of course, difficult, but once they start on a weighed and carefully prescribed well-balanced low-calorie diet and once they have gotten over the first ten days of the adjustment to the new habit pattern, they can continue on the low-calorie regimen more easily.

The real rub comes when they finally obtain the reduction of weight they are seeking. They have achieved the desired reduction, with constant effort, and they have been looking forward to the time when they can be relieved of their self-imposed deprivation. They are still prone to fall back into their old habit pattern of excessive eating. They have established a new habit pattern of rigid reduction which they are now ready to abandon. If they are not carefully guided at this critical point and taught to establish still a third habit pattern of the normal maintenance diet, they will almost surely revert to their original habit pattern of excessive eating.

I believe physicians who are concerned with metabolism therapy should pay much more attention to this transition period from the reduction diet to the maintenance diet. A friend of mine, a brilliant young physician, who like myself falls among the group of persons who tend to be extremely obese, told me one day: "Frank, you know I am an expert on diets because I have reduced by more than 600 pounds!" What he meant was that in his efforts to keep his weight down, he fluctuated so often from habit pattern number one of overeating to habit pattern number two of rigidly reducing that during the periods of reducing he had actually taken off 600 pounds!

He has now finally established a good maintenance pattern, after considerable effort, and is continuing at a normal level of weight. But the only physical therapeutic adjunct he has required is to follow a normal program of moderate exercises. No baths, no massage and no strenuous exercises were needed in producing his latest reduction in weight of more than 70 pounds and certainly none of the gadgets so extensively advertised would have been of the least assistance to him during this period; the only thing he needs to do now, from a physical therapeutic standpoint, is to follow a regimen of moderate activity including walking, swimming, gardening or a moderate amount of golfing, while he remains faithfully on his maintenance diet.

The facetious remark that "the best exercise for reducing is a rapid movement of the head from right to left when the mashed potatoes and gravy are passed" is based on sound reasoning.

ACCEPTED FOODS

The following products have been accepted as conforming to the rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Kraft Foods Company, Chicago

Kralex

A high protein, low sodium dairy product made from skim milk and casein with substantially reduced vitamin and mineral content. Ingredients: Skim milk and casein.

Analysis (submitted by manufacturer).—Total solids 21%, moisture 79%, ash 0.68%, fat 0.11%, protein (N × 6.38) 13.2%, lactose 7.7%, phosphate 0.42%, chloride 0.0044%, and sulfate 0.0022%.

Vitamins	µg per Gm.	
Vitamin A	0.11	(less than)
Thiamine	0.31	
Riboflavin	2.9	
Niacin	0.28	
Pantothenic acid	0.43	
Pyridoxine	0.35	
Choline	0.125	
Biotin	0.0018	

Minerals	Mg. per Gm.
Potassium	1.8
Calcium	0.85
Sodium	0.022

Calories.—0.80 per gram.

Use.—For use in diets restricted in sodium and/or where high protein is indicated.

4. Rynearson, E. H.: Personal communication to the author.

5. Churchill, Judith C.: What Do You Know About Eating? Reader's Digest, pp 48-49 (June) 1952.

Walker Laboratories, Inc., Mount Vernon, N. Y.

Protoplex

Ingredients: Casein; lactalbumin; yeast, primary dried, U.S.P.; liver, whole, desiccated, defatted, powdered; sugar, confectioners'; malted milk; vanillin and coumarin.

Analysis (submitted by manufacturer).—Total solids 96.0%, moisture 4.0%, ash 1.8%, fat 0.5%, protein (N × 6.38) 50%, carbohydrates (by difference) 40.5%.

Calories.—3.7 per gram; 105 per ounce.

Use.—For diets that require an increased intake of protein.

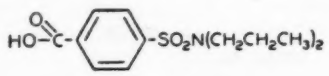
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Probenecid.—Benemid (Sharp & Dohme).—$C_{13}H_{19}NO_4S$.—M.W. 285.36.—*p*-(Dipropylsulfamyl)benzoic acid.—The structural formula of probenecid may be represented as follows:



Actions and Uses.—Probenecid, through a reversible action, interferes with the enzymatic metabolism and inhibits the renal tubular excretion of certain organic compounds such as penicillin, *p*-aminosalicylic acid, and phenolsulfonphthalein. It also acts as a urate eliminant by depressing the renal tubular resorption of urate, thus increasing the urinary excretion and reducing the serum level of uric acid. Probenecid is therefore useful as an adjuvant to intensive therapy with penicillin or *p*-aminosalicylic acid to increase and prolong the plasma concentrations of these anti-infective agents, and as an agent to promote the elimination of uric acid in the interval treatment of chronic gout. Its suppression of the renal clearance of phenolsulfonphthalein (phenol red) is of significance in the application of that kidney excretion test as a clinical guide to the effectiveness of probenecid. Analytic methods are also available for determination of probenecid metabolites in the body fluids.

Probenecid plasma levels of 2 to 10 mg. per 100 cc. have been correlated with effective plasma levels of penicillin and of *p*-aminosalicylic acid. Probenecid is capable of producing a twofold to fourfold increase in plasma levels of penicillin or *p*-aminosalicylic acid. Therefore it can be used to increase the effectiveness of orally administered penicillin and to reduce the dose required for adequate therapy by either the oral or intramuscular route. It may enhance the effectiveness of *p*-aminosalicylic acid in tuberculosis by increasing its plasma level above the usual limits attainable with oral administration without causing gastric distress.

The reabsorption of glucose, arginine, urea, or creatinine from the urine is not influenced by probenecid, nor does it affect the excretion of streptomycin, chloramphenicol, aureomycin, or terramycin. It raises the plasma concentration of the presumably biologically inactive conjugated sulfonamides, but the insignificant increase it produces in the free sulfonamide level is considered to be therapeutically inconsequential. However, whenever sulfonamides are administered in conjunction with probenecid, the sulfonamide plasma concentration should be regularly determined to avoid the possible development of toxic sulfonamide levels.

Probenecid may precipitate an acute attack of gouty arthritis when used as a urate eliminant in chronic gout. Also, by retarding the urinary reabsorption of urates, the possibility must be entertained that probenecid may favor the formation of uric acid stones from urates that would tend to crystallize in an acid urine. Colchicine should be administered without discontinuing probenecid to manage acute attacks of gout, and the precipitation of urates can be minimized by maintaining the urine alkaline to litmus. *Salicylates should not be administered in conjunction with probenecid because the therapeutic actions of the two drugs are antagonistic.* Probenecid has no analgesic action and is of no value in the treatment of acute gout. Serious anaphylactoid reactions are extremely rare; only one case has been noted to date.

Probenecid is rapidy absorbed into the blood stream following oral administration and is promptly eliminated by glomerular filtration. However, its reabsorption by the renal tubules is so great that the renal clearance cannot be estimated because little or none appears in the urine. It is metabolized slowly and its metabolic products are only slowly excreted in the urine. Following a single oral dose, a determinable and functionally useful plasma concentration persists in the dog for longer than 44 hours. A high therapeutic index has been demonstrated in a variety of laboratory animals. Although probenecid is well tolerated in man and is of low toxicity at useful dosages, occasionally patients may experience nausea. This may be overcome by reduction of the daily dosage. Rarely, sensitivity may be manifested by the appearance of a skin rash, but such reactions have been observed much less frequently following therapy with probenecid than following the administration of antibiotics. If a rash appears, therapy with probenecid should be discontinued until the cause of the reaction can be determined.

Probenecid obviously will serve no useful purpose in elevating the plasma concentrations of penicillin in the presence of known renal impairment. When there is glomerular involvement, its rapid accumulation in the plasma may cause nausea or other toxic symptoms. Even in the presence of renal damage, probenecid does not exhibit toxic action on the kidney.

Dosage.—Probenecid is administered orally. As an adjuvant to penicillin therapy of severe infections such as subacute bacterial endocarditis and staphylococcic osteomyelitis, the total daily dosage in absence of renal disease is 2 gm. given in four divided doses. The dose should be reduced for older persons in whom renal impairment is more likely to be present. When impairment is sufficient to retard the tubular excretion of penicillin, probenecid is not necessary and may not be tolerated. When used in conjunction with penicillin therapy of children, the daily dosage of probenecid is calculated on the basis of 0.01 gm. to 0.025 gm. per kilogram of body weight (ranging from 0.25 gm. to 1 gm.). The dosage of probenecid when used with *p*-aminosalicylic acid is similar and subject to the same precautions. The phenolsulfonphthalein (phenol red) excretion test employed by the intravenous (15-minute) method can be used as an index of effective plasma concentrations of probenecid. The renal clearance of phenol red is reduced to approximately one-fifth of the normal rate with adequate dosage of probenecid.

As a urate eliminant in chronic gout, a daily single dose of 0.5 gm. is recommended for one week, then increased to 1 gm. daily in two divided doses. This is usually adequate as a maintenance dose because renal impairment is common in patients with gout. However, for some patients it may be desirable to increase the total daily dosage to 2 gm., given in four divided doses, to obtain optimal excretion of uric acid. The urine can be maintained alkaline to litmus with doses of 5 to 7.5 gm. of sodium bicarbonate or potassium citrate, and the patient's acid-base balance should be checked regularly to avoid systemic alkalosis.

Tests and Standards.—

Physical Properties: Probenecid is a white, odorless, crystalline powder which melts between 198 and 200°. It is soluble in acetone, alcohol, dilute alkalis, and dilute sodium bicarbonate; and insoluble in dilute acids and water.

Identity Tests: Dissolve about 0.1 gm. of probenecid in 5 ml. of 10% sodium hydroxide, add about 50 mg. of Raney nickel catalyst, agitate for 5 min., and filter. Transfer the filtrate to a small beaker containing 10 ml. of 10% hydrochloric acid and test to be sure the solution is acid. Add 5 ml. of 0.1% sodium nitrite, allow the reaction mixture to stand

for 5 min., add 5 ml. of 0.5% ammonium sulfamate, allow to stand for 5 min., and finally add 5 ml. of 0.1% N-(1-naphthyl)ethylenediamine dihydrochloride: no color develops [*distinction from Carinamide (4'-carboxylphenylmethanesulfonanilide)*].

A 0.001% alcoholic solution of probenecid, prepared as directed in the spectrophotometric assay, exhibits ultraviolet absorption maxima at about 2250 and 2480 Å [specific absorbancy, E(1%, 1 cm.), about 336].

Purity Tests: Transfer to a 200 ml. glass-stoppered flask about 1.5 gm. of probenecid, accurately weighed, add 150 ml. of water containing 3 ml. of diluted nitric acid, stopper the flask tightly and agitate it mechanically for 15 min., and filter the solution. To 25 ml. of the filtrate add 1 ml. of silver nitrate T.S.: no more turbidity is produced than from 0.1 ml. of 0.02 *N* hydrochloric acid diluted to 25 ml. and treated in the same manner *(presence of halides)*. To 25 ml. of the filtrate add 1 ml. of diluted hydrochloric acid and 1 ml. of barium chloride T.S.: the turbidity does not exceed that of a control containing 0.2 ml. of 0.02 *N* sulfuric acid diluted to 25 ml. and treated in the same manner *(presence of sulfate)*. Determine the heavy metals content in 25 ml. of the filtrate as directed in *U. S. P. XIV*, p. 717: no more turbidity develops than in a control containing 20γ of lead.

Suspend in 100 ml. of water about 2 gm. of probenecid, accurately weighed. Heat on a steam bath for 30 min., cool, and filter. Titrate 25 ml. of the filtrate with 0.1 *N* sodium hydroxide using phenolphthalein T.S. as the indicator: not more than 0.5 ml. is required *(presence of free acid)*.

Dry about 1 gm. of probenecid, accurately weighed, at 105° for 4 hours: the loss in weight is not more than 0.1%.

Carefully ash about 0.5 gm. of probenecid, accurately weighed, in a platinum crucible: the residue is not more than 0.1%.

Assay: (Probenecid) Transfer to a 100 ml. volumetric flask about 0.1 gm. of probenecid, accurately weighed, and dilute to the mark with alcohol. Mix thoroughly. Transfer 10 ml. of this solution to a second 100 ml. volumetric flask and dilute to the mark with alcohol. Mix thoroughly and transfer 10 ml. of this solution to a third 100 ml. volumetric flask, dilute to the mark with alcohol, and mix thoroughly. Determine the absorbancy of the final solution (0.001%) at 2480 Å. The concentration of the final solution of probenecid in mg./ml. = absorbancy ÷ 33.6. The amount of probenecid present is not less than 95.0 nor more than 105.0%.

(Nitrogen) Transfer to a semi-micro Kjeldahl flask about 0.5 gm. of probenecid, accurately weighed, and digest for 4 hours with 7 ml. of sulfuric acid, 2.7 gm. of potassium sulfate, and 0.3 gm. of mercuric oxide. Cool the flask, add 15 ml. of water, and again cool. Connect the flask to a distillation apparatus, and add 35 ml. of 40% sodium hydroxide and 12 ml. of 40% sodium thiosulfate. Distil the ammonia into 50 ml. of saturated boric acid solution. Titrate the liberated ammonia with 0.1 *N* sulfuric acid using a mixed indicator (1:5 methyl red T.S. and bromocresol green T.S.). Each milliliter of 0.1 *N* sulfuric acid is equivalent to 0.001401 gm. of nitrogen and 0.02854 gm. of probenecid. The amount of nitrogen present is not less than 4.81 nor more than 5.01%, equivalent to not less than 98.0 nor more than 102.0% of probenecid.

Dosage Forms of Probenecid

TABLETS. *Identity Tests:* The solution as prepared in the assay responds to the spectrophotometric identity tests listed in the monograph for probenecid.

Assay: (Probenecid) Accurately weigh 20 tablets and grind them to a fine powder. Transfer to a 125 ml. glass-stoppered flask an amount of powder, accurately weighed, equivalent to about 0.1 gm. of probenecid. Add 50 ml. of alcohol and heat to incipient boiling. Stopper the flask and agitate mechanically to effect solution of the probenecid. Filter into a 100 ml. volumetric flask. Repeat the extraction twice more with 25 and 15 ml. portions of hot alcohol, collecting the filtrates in the 100 ml. volumetric flask. Wash the filter with hot alcohol and add the washings to the extracts. Dilute to the mark with alcohol and mix thoroughly. Proceed as directed in the spectrophotometric assay in the monograph for probenecid starting with, "Transfer 10 ml. of this solution to a second 100 ml. volumetric flask . . ." The amount of probenecid present is not less than 94.0 nor more than 106.0% of the labeled amount.

Sharp & Dohme, Inc., West Point, Pa.

Tablets Benemid: 0.5 gm. U. S. patent 2,608,507.

Phenylephrine Hydrochloride-U.S.P. (See New and Nonofficial Remedies 1952, p. 190).

Broemmel Pharmaceuticals, San Francisco.

Solution Isophrin Hydrochloride 0.25%: 30 cc., 118.3 cc., and 473 cc. bottles. A buffered, isotonic solution containing 2.5 mg. of phenylephrine hydrochloride in each cubic centimeter. Preserved with 0.1% chlorobutanol and 0.1% sodium sulfite.

Solution Isophrin Hydrochloride Ophthalmic 0.125%: 15 cc. and 118.3 cc. bottles. A buffered, isotonic solution containing 1.25 mg. of phenylephrine hydrochloride in each cubic centimeter. Preserved with 0.01% methylparaben, 0.005% propylparaben, 0.01% chlorobutanol and 0.1% sodium sulfite. U. S. trademark 355,953.

Polymyxin B Sulfate (See THE JOURNAL, Nov. 22, 1952, page 1220).

Burroughs Wellcome & Company, Inc., Tuckahoe, N. Y.

Sterile Powder Aerosporin Sulfate: 200,000 unit vials. Each vial contains 200,000 units of polymyxin B sulfate equivalent to 20 mg. of polymyxin B standard. U. S. patent 2,565,057. U. S. trademark 505,252.

Chas. Pfizer & Co., Inc., Brooklyn.

Sterile Powder Polymyxin B Sulfate: 500,000 unit vials. Each vial contains 500,000 units of polymyxin B sulfate equivalent to 50 mg. of polymyxin B standard.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

APPARATUS ACCEPTED

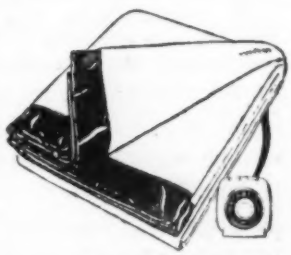
The following additional products have been accepted as conforming to the rules of the Council on Physical Medicine and Rehabilitation of the American Medical Association for inclusion in Apparatus Accepted. A copy of the rules on which the Council bases its action will be sent on application.

RALPH E. DE FOREST, M.D., *Secretary.*

General Electric Automatic Blankets, Models PB12A1 and PB15A1

General Electric Company, 1285 Boston Ave., Bridgeport 2, Conn.

The General Electric Automatic Blankets are heated by a network of small cables that contain a heating wire and a signal wire with necessary insulation. These cables are connected, by means of a suitable conductor, to a control box, which stands by the bedside and must be connected in turn with a source of 60-cycle alternating current at 115 volts. The blanket proper, made of a mixture of rayon, wool, and cotton, resembles an ordinary blanket except for the incorporated electrical network, is washable, and is listed by Underwriters' Laboratories, Inc. The full size and twin size are 183 and 167 cm. (72 and 66 in.) wide respectively; both are 218 cm. (86 in.) long. The maximum current consumption for the full size is 190 watts; for the twin size, 140 watts.



General Electric Automatic Blanket

From acceptable sources the Council obtained both clinical and laboratory evidence that these blankets satisfied the published requirements of the Council for acceptable electric blankets.

Goldentone Hearing Aid, Model 97

Goldentone Hearing Aid, Model 97

Johnston Hearing Aid Mfg. Co., 708 W. 40th St., Minneapolis 8. Distributed by the Goldentone Corporation, 708 W. 40th St., Minneapolis 8.

The Goldentone Hearing Aid, Model 97, is a conventional electric hearing aid. It measures 86 by 58 by 22 mm. without clothing clips and weighs 80 gm. without batteries. It is available in two forms, regular and "high power." The latter gives a higher acoustic gain.

Evidence from sources acceptable to the Council showed that both forms were satisfactory in construction and performance.

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COARCTATION OF THE AORTA

Coarctation of the aorta was described by Morgagni in 1760 and by the French anatomist Paris in 1789. Maud Abbott, in 1928, in her classical work on congenital heart disease, found 142 cases of this abnormality in 1,000 cases of congenital cardiovascular defects. In the period from 1928 to 1947, Reifenstein and his associates [1] collected 104 cases of coarctation of the aorta in which autopsy was performed. The probable incidence of the adult type of coarctation of the aorta according to these authors is 1 in 3,000 or 4,000 autopsies.

In its classical form coarctation of the aorta presents the following features: hypertension in the upper extremities; lower blood pressure in the legs with diminished or absent pulsation in the femoral and popliteal arteries; tortuous dilated intercostal arteries causing erosion and notching of the ribs, as seen in x-ray films; systolic murmur over the precordium and cardiac hypertrophy. Gross [2] stresses that, with rare exceptions, coarctation of the aorta may be recognized quickly and with accuracy by finding these signs on physical examination. Of the greatest importance in the diagnosis is the disparity of blood pressures in the arms and the legs. In the majority of patients beyond the first decade, hypertension is usually firmly established.

Although coarctation is occasionally compatible with long and useful life, at least 61% of the patients in Reifenstein's [1] series have died before or during their 40th year of life, and the average age at death was 35 years. The causes of death were rupture of the aorta, bacterial endocarditis or aortitis, congestive heart failure, and intracranial lesion. Rupture of the aorta or intracranial lesion occurred in about one-third of all patients who died. Congestive heart failure was common, but almost all patients who died of this cause had evidence of additional cardiovascular lesions, such as bicuspid aortic valves and abnormalities of the aortic arch. Hypertension, so characteristic of these cases, is probably to be ascribed not directly to the aortic block but to diminution in the renal blood flow below the constriction, which in turn causes a generalized vasoconstriction reflexly.

Until recently there was general agreement that there is no special treatment for this condition but that the subject should be protected as much as possible from physical strain and infections; however, less than 10 years ago, Crafoord [3] in Sweden, and later others in the United States, demonstrated the feasibility of a surgical approach to the problem. Attempts to relieve hypertension of aortic coarctation have, according to Gross,[2] included sympathectomy, anastomosis of the left subclavian artery to the distal aorta, as performed by Blalock and Park,[4] excision of the coarctation and end-to-end reconstruction of the aorta, and excision of the coarctation followed by insertion of a graft to bridge the resulting gap. The lumbodorsal sympathectomy was of little, if any, value. The Blalock and Park [4] operation has given fair and sometimes excellent results. Excision of the narrow portion and end-to-end anastomosis of the aortic tube is probably the procedure of greatest usefulness in this condition. Gross [2] in a series of 100 patients with coarctation operated on by him summarized the results as follows: 9 had only thoracic exploration; there were 11 fatalities from various causes; and, of the 80 patients who survived the operation, 1 had no relief of hypertension, 8 had fairly satisfactory relief, and 71 had complete disappearance of hypertension. Gross [2] resorted in 6 cases to the use of a graft to bridge the gap. Aortic segments have been gathered aseptically from human beings who have died, and this material has been used to bridge the defects that have been left after excision of coarctation. These grafts have varied from 4 to 5 cm. in length. The patients have been followed from three months to one and one-half years. This operation should be useful in cases in which the narrowed segment is very long or in cases in which the remaining aorta is rigid and the ends cannot be easily brought together.

Surgical therapy for coarctation has received general acceptance. Some 300 patients have been subjected to surgical therapy up to date. Stephens and Grimes,[5] writing in 1949, believed that the over-all mortality rate for the operative treatment of coarctation of the aorta was 22.5%. Glenn and O'Sullivan [6] in 1952 felt that the operative mortality rate should be 10% or less. Gross [2] feels that with early diagnosis and early surgical treatment the surgical mortality rate should not exceed 5% or 6%. Most surgeons stress that early diagnosis and early surgical treatment are essential, so that the operation is performed before irreversible changes have taken place.

1. Reifenstein, G. H.; Levine, S. A., and Gross, R. E.: Coarctation of the Aorta: A Review of 104 Autopsied Cases of the "Adult Type," 2 Years of Age or Older, Am. Heart J. **33**: 146-168 (Feb.) 1947.

2. Gross, R. E.: Coarctation of the Aorta: Surgical Treatment of 100 Cases, Circulation **1**: 41-55 (Jan.) 1950.

3. Crafoord, C., and Nylin, G.: Congenital Coarctation of the Aorta and Its Surgical Treatment, J. Thoracic Surg. **14**: 347-361 (Oct.) 1945.

4. Blalock, A., and Park, E. A.: Surgical Treatment of Experimental Coarctation (Atresia) of Aorta, Ann. Surg. **119**: 445-456 (March) 1944.

5. Stephens, H. B., and Grimes, O. F.: Coarctation of the Aorta: Report of Six Cases with Operation, J. Thoracic Surg. **18**: 804-826 (Dec.) 1949.

6. Glenn, F., and O'Sullivan, W. D.: Coarctation of the Aorta, Ann. Surg. **136**: 770-776 (Nov.) 1952.

TREATMENT FAILURE WITH PENICILLIN

Clinical experience has shown that large doses of penicillin may be ineffective in overcoming an infection, despite the fact that in vitro tests show the infective organism to be sensitive to the antibiotic. In some cases, refractoriness may be attributed either to inadequate concentrations of penicillin reaching the pathogenic organisms because of a walling-off of the focus of infection or to the development of resistant organisms. Another explanation for refractoriness, namely, that in older foci of infection the organisms are no longer multiplying or metabolizing as actively as in the fresh infection, has recently been explored by Eagle.[1] Mice were given intramuscular injections of known numbers of a highly virulent strain of group A streptococci, and treatment with penicillin was begun at varying intervals after inoculation. Animals were then killed at either one, two, four, or eight hours after treatment and the inoculated muscle emulsified and subcultured to determine the residual viable organisms.

Preliminary experiments with untreated animals revealed a rapid increase in the number of organisms recovered from the muscle during the first 9 hours after inoculation, with only a moderate increase occurring in the next 15 hours. In animals treated with penicillin during the first six hours of the infection, a rapid bactericidal effect was noted and no deaths occurred in animals set aside for mortality studies. If treatment was delayed 12 hours, however, the same dose of penicillin exerted only a slow and irregular bactericidal effect and the mortality rate did not differ significantly from that of untreated controls. In order to effect a cure when treatment was delayed, it was found necessary to continue treatment for six to eight days. It was considered that the retarded bactericidal action of penicillin in the older infection was unlikely to be due to interference of drug action by the development of a systemic host factor, since when mice infected 24 hours earlier were reinoculated and treated immediately the bactericidal action of penicillin was promptly manifested in the second site of inoculation but was not apparent in the site inoculated 24 hours earlier. It was further shown that failure of therapy in the older infections could not be explained by the increased number of organisms present or by failure of the drug to reach the organisms.

In discussing these results, Eagle draws attention to the well-known fact that penicillin kills bacteria most effectively in vitro when they are actively metabolizing a favorable medium and suggests that in older infections the organisms have multiplied to such an extent that they exhaust the surrounding tissue of nutrilites faster than they can be supplied by the blood stream. Furthermore, as inflammation sets in, the leukocytes may compete with these bacteria for the nutrilites, while local accumulation of products toxic to the bacteria may further reduce their metabolic activity. This concept is strengthened by the observation that, when larger inoculations were used, the time during which penicillin exerted a rapid bactericidal effect was shortened.

The author suggests that exhaustion of favorable foodstuffs may explain the paradoxical treatment failures sometimes observed with penicillin, citing among other examples the fact that when penicillin is used in the treatment of syphilis the incidence of treatment failure increases significantly if treatment is delayed until the secondary lesions have appeared. Since the physiological state of the organisms rather than the concentration of penicillin appears to be the limiting factor in such a refractory state, prolongation of treatment or the use of penicillin in combination with an antibiotic the effectiveness of which is not restricted to actively metabolizing organisms would appear at times to be a more logical approach to successful therapy than the use of increased dosages of penicillin.

FERROUS SULFATE POISONING

In recent years, numerous cases of ferrous sulfate poisoning have occurred in young children following the ingestion of medicinal iron.[1] In many instances death has occurred within six hours of taking the drug, being preceded by a shock-like condition consisting of pallor, cyanosis, tachycardia, and restlessness. In general, the autopsy findings have failed to offer a satisfactory explanation of death, and opinions have been divided as to whether the fatal outcome was due to shock secondary to local tissue damage or due to systemic effects following the passage of large quantities of iron into the blood stream. In reporting another fatality, Smith has outlined a possible modus operandi of the initial shock.[2] He postulates that the massive ingestion of iron leads to a breakdown of the "mucosa block" that normally regulates the absorption of iron from the gastrointestinal tract according to the iron requirements of the body.[3] The ingested iron would then promote the formation of apoferritin, which would combine with the iron to form ferritin. This in turn is thought to be identical with the vasodepressor material (V. D. M.), which is found in the blood of animals in experimentally induced shock and which is thought by Mazur and Shoor to play an important role in the development of the shock state.[4] Thus, Smith suggests that in acute iron poisoning an excessive production of ferritin both in the mucosal cells and in the liver, spleen, and bone marrow may lead to the escape of some of this material into the circulation to initiate and maintain the shock that is the conspicuous feature during the first phase of ferrous sulfate poisoning.

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1. Eagle, H.: Experimental Approach to the Problem of Treatment Failure with Penicillin: Group A Streptococcal Infection in Mice, Am. J. Med. **13**: 389 (Oct.) 1952.

1. Poisoning from Accidental Ingestion of Medicinal Iron, editorial, J. A. M. A. **148**: 1280 (April 12) 1952.

2. Smith, J. P.: The Pathology of Ferrous Sulphate Poisoning, J. Path. & Bact. **64**: 467 (July) 1952.

3. Hahn, P. F., and others: Radioactive Iron Absorption by Gastro-Intestinal Tract: Influence of Anemia, Anoxia, and Antecedent Feeding; Distribution in Growing Dogs, J. Exper. Med. **78**: 169 (Sept.) 1943.

4. The Functions of Ferritin, editorial, J. A. M. A. **150**: 36 (Sept. 6) 1952.

ORGANIZATION SECTION

STATEMENT OF BOARD OF TRUSTEES ON REPORT OF THE TRUMAN COMMISSION ON THE HEALTH NEEDS OF THE NATION

The Truman Commission on the Health Needs of the Nation released the first volume of its report of Dec. 18, 1952. Reference to the executive order issued by him on Dec. 29, 1951, indicates the broad nature of the task assigned to this Commission. Comments on this report are made with the full understanding of the very wide scope of the assignment and the very limited time the Commission had to attempt to accomplish its task.

It is to be particularly noted that the executive order directed the Commission to inquire into the medical needs of the military, defense production, the veterans and the general public. It was further instructed to report on the adequacy and prospective supply of physicians and allied professional personnel, local public health services, education and hospital facilities, and the adequacy of private and public programs designed to provide methods of financing medical care. The Commission was to consider particularly the impact of military and defense requirements on civilian health needs. Finally, it was to report on the extent of the federal, state and local government services in the health fields and the desirable level of their expenditures considering private resources and the *other financial demands on government.*

The Commission, by executive order, was required to submit its final report in one year. It has labored arduously and any criticism of its final report must be made in the light of the tremendous scope of its assignment and the time limit on its activities. The Board, however, is not justified in withholding criticism on this account, since the impact of such a report, unless subjected to careful analysis, may carry undue weight in future discussions of the many important problems affecting the health of the American people.

The Commission has little to offer that is new. The answer proposed for the solution to almost every problem is additional federal funds. Aside from the question of how these funds are to be raised, in the background of all of these endeavors lurks the shadow of federal control. This control may come directly or by established standards to which all states must conform. These standards will not be written into the law but will be established by administrative regulations. If the pattern laid down in former bills is followed, the administrative agency will be authorized to set up a plan of its own, in any state that does not conform to federal standards.

The people are interested in a higher quality of medical service. Millions are already covered by a voluntary plan. An increase in federal expenditures leading to further taxation will give one more twist to the spiral of inflation and force a higher premium rate on those millions already protected. The philosophy behind this report is barren. While it gives lip service to the responsibility of the individual for his own health, it destroys this sense of responsibility by insistence on federal aid from every angle. While it stresses the importance of a personal physician, it demeans his standing by unfavorable and false comparisons of his ability to render good medical care as contrasted to the much vaunted groups of highly trained specialists.

While the report at present is devoid of supportive factual material, the basic philosophy underlying it is quite evident. The argument is that health is conditioned by food, housing and education so that control of all of these factors, as well as health measures per se, should come under the direction of an all-wise federal government. Without naming it, the Commission has described the welfare state. It may be just as well to call it by its true name, the socialist state.

At this point it may be recalled that the Commission was directed to report on the extent of federal, state and local government services in the health field and the desirable level of these expenditures considering private resources and other financial demands on government. There is little evidence, in Volume I, that the Commission has seriously considered this part of the directive under which it was operating.

The Commission also failed to meet another most immediate issue, that is, the failure of the federal government to coordinate its own activities. The most pressing problem in medicine is the conservation of medical resources, and the most pressing problem before the country is conservation of its economic resources. The Board can see little sense in the government, under the Hospital Construction Act (Hill-Burton), spending millions of dollars constructing civilian hospitals and at the same time building up hospital systems in the Army, Navy, Air Corps and Veterans Administration, beyond the legitimate needs of those agencies, and competing with civilian hospitals for scarce health personnel. In this process, these government agencies are competing with each other, and, at the same time, competing with private hospitals by caring for many thousands of patients that properly belong in civilian hospitals. The problem was placed squarely before the Commission and was left unanswered. This is an area where facts are most readily available and where constructive recommendations could most quickly be put into effect.

In the field of education, the Commission recommends extension of federal subsidy to schools of medicine and the allied health agencies, not only for construction and renovation of facilities but directly for operational cost, elimination of deficits and for scholarship. It rather naively asserts that public opinion would prevent the federal government from influencing the policy of these schools or the direction of teaching in any way. It might be recalled that during the pressing days of the late war medical students were urged to accept federal subsidy without obligation. Now, the nation urgently demands that they repay that obligation by war service. The American Medical Association has declared the principle that acceptance of federal subsidy by medical schools, except in the form of one-time grants for construction of facilities, endangers the future independence of medical teaching.

Appraisal at this point is hampered by the fact that the report is being presented in the reverse of its proper order. The scientific and logical approach would be the presentation of factual material, analysis of the data presented, comparison of this data with other material of like nature, presentation of conclusions on the basis of facts and, finally, recommendations as to action. The reverse has been the procedure in this case. The public is now presented with a series of conclusions and recommendations not supported by any factual data but based solely on the opinions formed by the members of the Commission. A detailed appraisal of the validity of these opinions and recommendations cannot be made until the supporting material is available.

These comments, however, are in order at this time, since all of the problems discussed in Volume I of the Commission's report have long had the thoughtful consideration of the American Medical Association and many other allied health groups. Furthermore, many of the solutions proposed have been thoroughly aired in the halls of the Congress and rejected.

There are many general statements in the Commission's report with which the Association has long been in agreement. When the opinions of honest men diverge, it is often on the basis of methods of accomplishing what appear to be desirable ob-

jectives. We can all agree that the American people should have access to the best possible health services. There is no debate on this specific objective. There is, however, divergence of opinion as to how and when this can best be accomplished.

The Commission, in the opinion of the Board, fails to meet one of the major issues confronting us at the present moment of our history. We are now engaged in a vast world wide struggle which strains our economic and personnel resources. To meet the power set against us, we must make the best possible use of our total resources in order to protect our nation from foreign aggression and from economic disaster at home. The directive of Mr. Truman is interpreted in this light when it states, among other things, "the Commission is authorized and directed to inquire into, and study the extent of Federal, State and local government services in the health field, and the desirable level of expenditures for such purposes, taking into consideration other financial obligations of government and the expenditures for health purposes from private sources."

The Commission, in its statement in Volume I and its recommendations, has not met this specific issue. As a practical document, it avoids some of the principal problems that now confront us, and in certain instances, overlooks the impelling nature of other needs. The Commission, in the course of its report, made thirty-three recommendations for federal appropriations, covering specific health objectives. Since most of these are on a matching basis, it would involve as great or greater contributions from state and local government. While the Commission estimates the total annual contribution of the federal government to be a little over $1,000,000,000 (one billion dollars), the total cost to the taxpayers would be more than double this amount, assuming that the Commission has made a correct estimate of the cost. An analysis of these various recommendations indicates, however, that the ultimate cost would be greatly in excess of the estimate made by the Commission. One pertinent economic question at this point is, can the people of this country, at this time or in the foreseeable future, take on this additional tax burden?

The Commission, in advocating compulsory health insurance for a large segment of our population, is running directly counter to the opinion of the nation as expressed by thousands of organizations and as overwhelmingly demonstrated at the polls. As previously stated by Dr. Louis H. Bauer, President of the American Medical Association, "The Commission proposes that funds collected through the Social Security System be used to purchase medical care for beneficiaries (now four and one-half million) covered by that system. Under this plan, the federal government, through payroll deductions, would pay directly for the medical care of an ever-increasing segment of our population, and our health services would inevitably be controlled by 'Big Government'."

The report in many of its parts is illogical and contradictory. Nowhere is this more evident than in the inadequate discussion of its proposal for a combined health and security department. There is no definition of the relationship of these two segments nor of how the expanding activities of military and veterans' medicine could be brought under control or coordinated with civilian medical needs and other medical functions of the federal government. Thinking is obscure on how a federal agency that establishes standards and patterns can at the same time stimulate "a flow of new ideas and plans for the strengthening of our health services coming from states and localities into the federal government."

The Board is fully aware that it is not in possession of all of the material that came before the Commission, and it awaits the publication of these facts, in the full report, before reaching final conclusions. In Volume I, brief references are noted to the tremendous advances made by American medicine, in the last half century, without benefit of any large contribution from the federal government and without federal standardization. The Board is therefore somewhat confused by the Commission's strong and repeated urging that the health of the American people can only be secured by widespread invasion by the federal government into almost every phase of medical activity.

AMERICAN MEDICAL ASSOCIATION COUNCIL ON RURAL HEALTH

Meeting of State Committees on Rural Health and Committees Handling Rural Health Programs

Ballroom, Hotel Roanoke, Roanoke, Va.

Feb. 26, 1953

PROGRAM

Theme—Doctor Participation in Community Programs

F. S. CROCKETT, M.D., *Presiding*

12:00 NOON *Registration*

2:00 P. M. *Greetings*

WALTER B. MARTIN, M.D., Member, Board of Trustees, American Medical Association, Norfolk, Va.

2:10 P. M. *Doctor Participation in Community Programs*

F. S. CROCKETT, M.D., Chairman, Council on Rural Health, American Medical Association, Lafayette, Ind.

The Place of Public Health Service in County Health Councils

2:25 P. M. (*a*) FRANKLIN D. YODER, M.D., Director, State Health Department, Cheyenne, Wyo.

2:45 P. M. (*b*) ROBERT YOHO, Director, Division of Health and Physical Education, State Board of Health, Indianapolis

The Place of the Physician in Rural Health Activities

3:05 P. M. (*a*) CHARLES R. HENRY, M.D., Rural Health Committee, Arkansas Medical Society, Little Rock, Ark.

3:25 P. M. (*b*) HADDON A. PECK, M.D., Chairman, Rural Health Committee, Kansas Medical Society, St. Francis, Kan.

3:45 P. M. *Discussion Period*

5:00 P. M. *Adjournment*

6:00 P. M. *Social Hour*

7:00 P. M. *Dinner*

SPECIAL FEATURES IN SCIENTIFIC EXHIBIT, NEW YORK SESSION

The Committee on Scientific Exhibit has planned several special features for the New York Session. The Special Exhibit on Fractures will be shown again, with demonstrations on fractures of the ankle, wrist, spine, and elbow and the results of falls on the extended hand. The committee in charge consists of Gordon M. Morrison, M.D., Boston, chairman; Ralph G. Carothers, M.D., Cincinnati; Herbert W. Virgin, M.D., Miami, Fla., and Kellogg Speed, M.D., Chicago, emeritus.

The Section on Pathology and Physiology is making arrangements for a Special Exhibit on Fresh Pathology. An advisory committee has been appointed, consisting of Frank B. Queen, M.D., Portland, Ore., chairman; H. J. Corper, M.D., Denver; Edwin F. Hirsch, M.D., Chicago; L. G. Montgomery, M.D., Muncie, Ind; J. Earl Thomas, M.D., Philadelphia, and M. G. Westmoreland, M.D., Chicago. An active local committee will be in charge of the demonstrations under the guidance of Milton Helpern, M.D., New York.

The Section on Pediatrics has planned an exhibit symposium on childhood accidents. Subjects to be covered will include common types of poisoning in children, poisoning by pesticides, lead poisoning, suffocation, burns, and a review of accidents in general. F. Thomas Mitchell, M.D., Memphis, is in charge, assisted by George M. Wheatley, M.D., New York.

MEDICAL NEWS

CALIFORNIA

Honor Consular Corps.—At the annual dinner meeting of the San Francisco chapter of the Pan American Medical Association, honoring the San Francisco Consular Corps and visiting Latin American physicians and students, Dr. Robert T. Legge, professor emeritus of hygiene and preventive medicine, University of California Medical School, Berkeley, spoke on "Occupational Diseases." The newly elected officers, all from San Francisco, are: president, Dr. Jacob C. Geiger; first vice-president, Dr. Marius A. Francoz; second vice-president, Dr. Berthel H. Henning; secretary, Dr. Ralph A. Reynolds; and treasurer, Dr. Luis E. Chaparro.

Course in Neurology.—A course in basic neurology is offered by the University of California extension to graduates of approved medical schools and to graduate psychologists. Meeting each Monday, Feb. 16 to June 8, 7-9 p. m., in the main building of the Veterans Administration Hospital, 5901 Seventh St., Long Beach, the course will offer a survey of the organization and function of the central nervous system. The first lecturer, Theodore H. Bullock, Ph.D., associate professor of zoology at U. C. L. A., will talk on "The Evolution of the Nervous System." Information may be obtained from Dr. Thomas H. Sternberg, Medical Extension, University of California, Los Angeles 24. Fee for the graduate course is $75.

FLORIDA

Cerebral Palsy Clinic.—A medical clinic and demonstration on cerebral palsy will be conducted Feb. 2-6 (9 a. m. to 5 p. m.) by Dr. Winthrop M. Phelps, Baltimore, in the clinic of the United Cerebral Palsy Association of Miami, 1612 S. W. First St. Members of the Dade County Medical Association are cordially invited to attend and to inspect the new and expanded facilities of the organization. The full clinic staff of physical, speech, and occupational therapists and the director of special education will attend.

GEORGIA

Group Malpractice Insurance Withdrawn.—The United States Fidelity and Guaranty Company, which for many years has issued to the Medical Association of Georgia a group professional liability policy providing optional malpractice coverage for individual members of the society, has announced its intention to cancel this policy on its anniversary date, March 18. Persons insured under group policy PL-518 will, however, continue to be insured until the expiration date of their individual certificates. The company in the future will write this type of coverage only on an individual basis on a standard form of new professional liability policy approved by the Insurance Department of the State of Georgia.

ILLINOIS

Civil Service Positions Available.—The Civil Service Commission has issued another call for applicants for the positions of psychiatrist, physician, and tuberculosis control physician. Written applications and oral tests are required. Information and application forms may be obtained from local offices of the state employment service or from the Civil Service Commission, Armory Bldg., Springfield.

Dr. Miller Honored.—At its annual convention in Chicago, Phi Delta Epsilon medical fraternity presented its distinguished service award to Dr. J. Roscoe Miller, Evanston, president of Northwestern University since 1949, "in recognition of his outstanding contribution in advancing the arts and science of medicine." Dr. Miller has been assistant dean of the university (1933-1941), dean (1941-1949), and professor of medicine since 1949. In 1948-1949 he served as president of the Chicago Medical Society and the Association of American Medical Colleges.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Chicago

Antimicrobial Treatment in Tuberculosis.—On Jan. 27 Dr. David B. Radner will address Medical Unit 9-20, U. S. Naval Reserve, on "The Newer Antimicrobial Treatment in Tuberculosis." The unit will meet at the U. S. Naval Reserve Armory at Randolph Street and the lake (CEntral 6-6828) at 8 p. m.

Lecture Series.—The Chicago Medical School, 710 S. Wolcott Ave., is giving a series of lectures on somatopsychic relationships, Tuesdays, 12:30 p. m., in amphitheater A. On Jan. 27 Ward C. Halstead, Ph.D., professor of experimental psychology and director of medical psychology, University of Chicago, will discuss "Psychological Reactions to Organic Disease."

Isoniazid Therapy.—At its meeting, Jan. 30, 8 p. m., in the Hotel St. Clair (162 E. Ohio St., SUperior 7-4660), the Chicago Tuberculosis Society will present the following program on isoniazid therapy:

In Acute Tuberculosis, Meyer R. Lichtenstein.
In Chronic Tuberculosis, George C. Turner.
In Tuberculous Meningitis, Mark H. Lepper.
As an Adjunct to Surgery, William M. Lees.

Discussion will be by Dr. William B. Knapp.

INDIANA

Dr. William D. Weis Resigns.—Dr. William D. Weis, Lake County health officer for 18 years, and city health officer of Hammond from 1908 to 1918, has resigned. During his term of office the 79-year-old physician established rules of sanitation for Hammond restaurants and groceries; increased the nursing service from one nurse for 10,000 school children to nine nurses for 19,000 children; and made the department of health an integral part of the county government and an agency of health education for the public.

MARYLAND

Discussion of Blood Dyscrasias.—At its evening meeting Jan. 16 the Baltimore City Medical Society presented a panel discussion on blood dyscrasias, with Dr. Cyrus C. Sturgis, Ann Arbor, Mich., as moderator and Drs. C. Lockard Conley, Robert N. Cooley, Vernon H. Norwood, and Milton S. Sacks, all of Baltimore, as participants.

Congenital Heart Disease Program.—A new regional congenital heart disease program has been established at Johns Hopkins Hospital, Baltimore, to serve children living in the Middle Atlantic and Southern states. According to Dr. Martha M. Eliot, chief of the Children's Bureau, $20,000 in federal funds has been allotted for the work up to next June 30. The program will operate primarily for children from Pennsylvania, Delaware, West Virginia, Virginia, the District of Columbia, North Carolina, South Carolina, Tennessee, Alabama, Georgia, Florida, Mississippi, Puerto Rico, and the Virgin Islands.

Personal.—Dr. Harold W. Keschner has been appointed chief of the pathology department, Baltimore City Hospitals, and assistant professor of pathology, University of Maryland School of Medicine, Baltimore.——The Williams & Wilkins Company, medical publishers in Baltimore, have named as consultant to their editorial department Dr. Henry J. L. Marriott, assistant professor of medicine at the University of Maryland School of Medicine, Baltimore.——Dr. W. Sinclair Harper Jr., director of mental health for Toronto, Canada, was recently appointed health officer of the Eastern Health District in Baltimore.

MASSACHUSETTS

Lahey Clinic Lecture.—A symposium on rheumatic heart disease will be presented in the Joslin Auditorium, New England Deaconess Hospital, Boston, Jan. 28 (7:30 p. m.). Collaborators will be Drs. Robert E. Foley, Herbert D. Adams, and Ferdinand A. Salzman.

Pediatric Program.—On Jan. 28 (2-5 p. m.) as part of its 15 hour postgraduate medical institute course in general medicine, the Massachusetts Medical Society will present the following lectures in the Doctors' Library, Burbank Hospital, Fitchburg:

General Surgery in the Infant, Orvar Swenson, Boston.
Radiologic Aspects of Surgical Problems in Children, Carroll Z. Berman, Boston.
Neurosurgical Treatment of Congenital Anomalies, Donald D. Matson, Boston.

New England Center Lectures.—The House Officers' Association of New England Center Hospital announces the following programs in its evening lecture series:

Jan. 30, Some Aspects of Acid Base Regulation, Robert F. Pitts, professor of physiology and biophysics, Cornell University Medical College, New York.
Feb. 20, Some Contributions to the Physiology of Gastric Secretions and the Peptic Ulcer Problem, Lester R. Dragstedt, professor of surgery, University of Chicago School of Medicine.

These programs will be held at 7 p. m. in the Stearns Auditorium of New England Center Hospital. All interested persons are invited to attend.

MICHIGAN

Meeting on Improvement of Nursing Service.—Members of the Michigan State Medical Society are invited to attend the Southwestern District Meeting on Improvement of Nursing Service in Michigan, which will be held in Kalamazoo, Jan. 29. This workshop meeting, which will start at 9:30 a. m. on the 7th floor of Bronson Methodist Hospital, is sponsored by the Michigan State Nurses Association.

Annual Clinic Day.—Mt. Carmel Mercy Hospital, Detroit, will have its 14th annual clinic day program Jan. 28. The following papers will be presented:

Management of Patients with Renal Lithiasis, Charles C. Higgins, Cleveland.
Office Gynecology, Walter T. Dannreuther, New York.
Present Day Treatment of Chronic Arthritis, Russell L. Cecil, New York.
Carcinoma in Situ, Grades of Malignancy and Prognostic Significance, Albert C. Broders Sr., Temple, Texas.
Iatrogenic vs. Theogenic Disease, James H. Means, Boston.
Use of Surgical Methods in Treatment of Acute and Recurrent Pancreatitis, Robert Elman, St. Louis.
Tumors of the Neck, Samuel F. Marshall, Boston.

At a luncheon (compliments of the Sisters of Mercy), Rt. Rev. Msgr. Maurice S. Sheehy, LL.D., Washington, D. C., will talk on "The Priest and the Doctor." The banquet will be held at 6:30 p. m. in the main ballroom of the Statler Hotel.

NEBRASKA

Personal.—Dr. George W. Covey, Lincoln, was recently elected editor of the *Nebraska State Medical Journal.*——The Lincoln Kiwanis Club recently presented its medal for distinguished service to Dr. Morris Nielsen, Blair, "doctor of medicine, humanitarian and citizen," the first member of the medical profession to receive the award.

Psychiatric Institute Opens Western Clinic.—The Western Clinic of the Nebraska Psychiatric Institute was opened at St. Mary Hospital in Scottsbluff Dec. 15. Sponsored jointly by the board of control and the University of Nebraska College of Medicine, Omaha, the new clinic will provide psychiatric diagnosis, treatment, and consultation services to the western portion of Nebraska, where such service was previously unavailable. Consultation services are open to any resident of the state of Nebraska, but extended treatment will be given only to those unable to afford private care. It is preferred that applications for service be made through the patient's family physician; however, direct reference through other agencies will be accepted. Applications should be addressed to the Western Clinic, Nebraska Psychiatric Institute, St. Mary Hospital, Scottsbluff.

NEW YORK

Dog Quarantine Imposed.—Because a rabies-infected fox was recently found in Rochester and an infected dog in Livingston County, dogs have been ordered restricted to their owners' property or leashed throughout Livingston and Monroe counties, including the city of Rochester, for at least six months to prevent the spread of rabies. The quarantine applies to all dogs, whether or not they have been immunized.

In Memory of Dr. Joseph Goldberger.—In accepting a portrait of the late Dr. Joseph Goldberger, presented by his widow to his alma mater, the New York University College of Medicine, Dean Currier McEwen revealed that the laboratories for the study of nutrition and the metabolic diseases in the new medical science building, being built for the New York University-Bellevue Medical Center, will be named in honor of Dr. Goldberger, whom he described as "perhaps the greatest" medical alumnus of New York University.

Bronx Society Asks Tests for Drivers.—The Bronx County Medical Society has urged Gov. Thomas E. Dewey to appoint a fact-finding board of state legislators and physicians to formulate medical standards for motorists, in order to rid the roads of physically and mentally handicapped drivers. Basic requirements, as outlined by Dr. George Schwartz, chairman of the public relations committee of the society, include a physical examination of every driver at the time of initial issuance or renewal of license, to be made by a physician in private practice, in a hospital clinic, or one attached to the motor vehicle bureau. Recommended for inclusion in the examination were tests of vision, hearing, physical deformity or dismemberment incompatible with safe driving, constitutional diseases, and psychopathic states.

New York City

Hepatitis and Cirrhosis to Be Discussed.—A round-table discussion of current problems in hepatitis and cirrhosis of the liver will be presented as the scientific program of the Stated Meeting of the Medical Society of the County of New York, Jan. 26. Dr. Alexander B. Gutman, director of medical research at Mount Sinai Hospital, will serve as moderator and the following as collaborators: Dr. Franklin M. Hanger, Columbia University College of Physicians and Surgeons; Dr. William J. Eisenmenger, Rockefeller Institute of Medical Research; Dr. John R. Neefe, University of Pennsylvania, Philadelphia; Dr. Louis M. Roussellot, St. Vincent's Hospital; and Dr. Stephen H. Deschamps, U. S. Army Hospital, Medical Service, Fort Dix, N. J.

Tuberculosis Sanatorium Conference.—The 56th clinical session of the Tuberculosis Sanatorium Conference of Metropolitan New York will be held in the amphitheatre, Cornell University Medical College, 1300 York Ave. (at 69th St.) Jan. 28 at 8:15 p. m. The topic of discussion will be "The Solitary Tuberculous Focus: Bronchial Relations to Solid Necrotic Tuberculous Lesions." Dr. David Ulmar, consultant in pulmonary diseases, Veterans Administration Hospital, Castle Point, will preside. Presentation will be made by Dr. Edgar M. Medlar, Hermann M. Biggs Memorial Hospital, Ithaca. Dr. Julia M. Jones, Bellevue Hospital, Dr. Herbert C. Maier, Lenox Hill Hospital, and William Steenken Jr., Trudeau Laboratory, will participate in the panel discussion.

Ophthalmologists Needed.—The New York City Department of Health has openings for ophthalmologists in its diagnostic eye clinic, 22 of which are operated for patients up to 21 years of age throughout the city. These clinics provide diagnostic service only. Each ophthalmologist is expected to see about 12 children per three hour clinic session. Applicant must (1) either be a diplomate of the American Board of Ophthalmology or have completed a residency in ophthalmology in a hospital approved for residency training by the A. M. A. Council on Medical Education and Hospitals and be eligible to take the examination of the American Board of Ophthalmology and (2) be licensed to practice medicine in New York. Clinic ophthalmologists are paid $11.30 per three hour clinic session, are given a prorated amount of annual vacation with salary, and may join the New York City Retirement System. Application should be made in writing to Dr. Helen M. Wallace, director, Bureau for Handicapped Children.

OHIO

Lecture on Radiation Therapy.—On Jan. 27 (8 p. m.) the Cleveland Clinic will present a discussion of "Principles of Radiation Therapy" by Otto Glasser, Ph.D., and Dr. Robert A. Hays. The medical profession is cordially invited to attend this lecture, which will be given in the North Clinic Building (fourth floor).

Dr. Hayman Named Tufts Dean.—Dr. Joseph M. Hayman Jr., professor of medicine, Western Reserve University School of Medicine, Cleveland, has been appointed dean of Tufts College Medical School, Boston, to succeed Dr. Dwight O'Hara, who recently resigned. Dr. Hayman will also hold a professorship of medicine at Tufts and will be senior physician in the New England Center Hospital, Boston, and the Pratt Diagnostic Clinic, for which the school is the teaching base. Dr. Hayman will assume his new duties April 1.

Medicolegal Cooperation at Cincinnati.—The University of Cincinnati's colleges of law and medicine have set up a novel interchange plan under which law students will attend a medical college diagnostic clinic weekly during the first semester and medical students will visit the law college during the second semester to become trial witnesses in its student practice court. Now on its trial run, the project was set up by students through a desire to have both sides become better acquainted with each other's terminology, techniques, and difficulties in dealing with medicolegal problems.

OKLAHOMA

Meeting on Trauma.—On Jan. 26 at 8 p. m., Dr. Carl A. Moyer, professor of surgery, Washington University School of Medicine, St. Louis, will address the Tulsa Academy of General Practice on "Recent Advances in the Supportive Care of Trauma." Dr. Moyer, formerly dean of Southwestern Medical School of the University of Texas, Dallas, was recently appointed Bixby professor of surgery at Washington University. The meeting, which will be held at the Hotel Tulsa, will be open to all physicians.

Personal.—Dr. Henry K. Speed of Sayre was recently elected president of the Sayre Chamber of Commerce.——Dr. John L. Day, Woodward, was recently awarded a certificate of life membership by the Oklahoma State Medical Association, of which he has been a member since 1910.——Dr. Nesbitt Miller, Oklahoma City, has been selected as director of the Oklahoma Defense Blood Center to succeed Dr. John R. B. Branch, who has moved to Crescent, Ga.——Dr. Felix M. Adams, medical superintendent of the Eastern State Hospital, Vinita, for the past 40 years, was recently presented with a certificate award for "faithful service and outstanding leadership" by the Tulsa County Health and Welfare Association. Dr. Adams was said to be the youngest state hospital superintendent in the nation when he was appointed head of the Vinita hospital in 1913 and is today the oldest employee in continuous service to the state.——Drs. Udonna C. Boon, Denis S. Downey, and William H. Cook, of Chickasha, and Dr. Louis A. Hahn, of Guthrie, were recently awarded pins and certificates by the Oklahoma State Medical Association in recognition of their half century of service as physicians.

PENNSYLVANIA

Cancer Clinic.—The Delaware County Unit of the American Cancer Society will hold a tumor clinic for all physicians of the county the second Wednesday of each month (12:30-1:30 p. m.) in the auditorium of the Delaware County Hospital, Drexel Hill.

Pennsylvania Week Award.—Dr. Martha L. Bailey, Dillsburg, was recently named as one of the first two women to receive the Pennsylvania Week award for outstanding public service. Dr. Bailey, who is a member of the Board of Directors of the York County Tuberculosis and Health Society, is president of the Dillsburg Women's Club and chairman of health and welfare of the York County Federated Women's Club. She was director of medical service for the northern region of York County during World War II and was formerly in the state health department, where she established a series of maternal and child health centers in smaller communities.

Philadelphia

Psychoanalytic Lecture.—On Jan. 29 the Extension School of the Philadelphia Psychoanalytic Institute will present a lecture by Dr. I. Arthur Mirsky, Pittsburgh, on "Family Patterns, Constitution and Personality." This is one of a series on family patterns and personality development that is being given by the institute. Individual lectures, $1.75; residents, interns, and medical students are invited to attend as guests.

Meeting of Medical Historians.—The section on medical history of the College of Physicians of Philadelphia will meet Jan. 29 at 8:30 p. m. in the hall of the college, 19 S. 22nd St. The following program will be presented:

George M. Piersol and Igho H. Kornblueh (by invitation), Vanishing Springs and Health Resorts of Pennsylvania.
Whitfield J. Bell Jr., Ph.D., professor of American history at Dickinson College, Carlisle, Pa. (by invitation), Medical Students and Their Examiners in 18th Century America.

Fund for Division of Hematology.—According to the will of Thomas Drake Martinez Cardeza, a director of the Fidelity-Philadelphia Trust Company, the bulk of his $400,000 estate will be given to Jefferson Medical College and its hospital for research in medicine. His will stipulated that the fund be known as the Charlotte Drake Cardeza Foundation. The money is to be applied for the maintenance of the division of hematology in the department of medicine.

Viruses as Immunizing Agents.—The first annual oration sponsored by the Philadelphia Hahnemann Medical College Alumni Society will be delivered Jan. 29, 9 p. m., in the Klahr Auditorium, Hahnemann Medical College, 235 N. 15th St. Harold R. Cox, Sc.D., director of viral and rickettsial research, Lederle Laboratories, Inc., Pearl River, N. Y., will speak on "Use of Living Viruses as Immunizing Agents with Particular Emphasis on Poliomyelitis." Physicians, medical students, laboratory technicians, and nurses are welcome.

TENNESSEE

University News.—Dr. Walter F. Bernell James, formerly associate professor of obstetrics, Meharry Medical College, Nashville, has been promoted to the rank of professor.——Dr. E. Perry Crump has been appointed professor of pediatrics.

Dr. King Honored.—An oil portrait of Dr. Charles C. King, a gift of friends, was recently unveiled at the West Tennessee Cancer Clinic in Memphis. Dr. King, who has served for eight years as president of the Memphis Chapter of the American Cancer Society, recently received the 1951 citizenship award of the Newspaper Guild of Memphis in recognition of his work against cancer, his efforts in behalf of the Tennessee Society of Crippled Children and the Shrine School for Crippled Children, and his contributions to various other civic endeavors.

TEXAS

First Bertner Professor.—Edward C. Hinds, M.D., D.D.S., has been named the first professor to occupy the E. W. Bertner chair of oral surgery recently established by the University of Texas Dental Branch, Houston. The professorship is a memorial to the late Dr. Ernst W. Bertner, first president of the Texas Medical Center.

Society News.—At its semiannual meeting in Austin, the Texas Surgical Society elected Dr. George W. Waldron, Houston, president; Dr. Harriss Williams, Austin, first vice-president; Dr. Hub E. Isaacks, Fort Worth, second vice-president; Dr. Albert W. Hartman, San Antonio, secretary; and Dr. Robert L. Sewell, Fort Worth, treasurer.

Restorative Medicine Institute.—The Institute of Restorative Medicine was recently opened in Jefferson Davis Hospital, Houston, by the department of psychiatry and neurology of Baylor University College of Medicine. Patients are under study to determine the feasibility of rehabilitation in their cases, according to Dr. Ben L. Boynton, professor of physical medicine and rehabilitation at Baylor. The new unit, planned for the benefit of patients of all ages in need of medical rehabilitation, aims to restore the patient to a productive place in society.

VIRGINIA

Four Physicians Honored.—Drs. Arthur J. Edwards, Samuel R. McDowell, W. R. Rogers, and Joseph S. Bachman were guests of honor at a dinner given by the medical staff of Kings Mountain Memorial Hospital, Bristol. Dr. Bachman has practiced in the bi-state city of Bristol (Tenn. and Va.) for 62 years, Dr. Edwards for 52, Dr. Rogers for 51, and Dr. McDowell for 43 years. Dr. William K. Vance spoke on "Medicine, Then and Now, 1900-1952." The honored guests were given inscribed silver plates and smoking jackets.

WASHINGTON

University News.—Dr. Edward C. Roosen-Runge, formerly on the faculty of the University of Louisville School of Medicine, has been appointed assistant professor of anatomy at the University of Washington, and Lyle H. Jensen, Ph.D., has been promoted to assistant professor of anatomy.

Directory on Handicapped Children Agencies.—The Washington State Health Council has issued a directory to help physicians put parents of handicapped children in touch with community agencies that can help them; it also lists agencies serving mentally retarded children, those having sight or hearing handicaps, the crippled, epileptics, and those with congenital defects, poliomyelitis, cerebral palsy, or rheumatic fever. A copy of the directory will be sent to each member of the Washington State Medical Association. Extra copies may be obtained from the Washington State Health Council, 905 Second Ave. Bldg., Seattle 4, at cost, 5 cents each.

WEST VIRGINIA

Society News.—At its annual business meeting the Academy of Medicine of Parkersburg elected Dr. Forrest L. Blair, president; Dr. Robert C. Lincicome, vice-president; and Dr. John H. Gile, secretary-treasurer (reelected).

Rheumatic Fever Prevention Program.—Distribution of penicillin under the rheumatic fever prevention program of the state department of health will be made hereafter in accordance with the following principles: Penicillin will be distributed to medically indigent patients under the age of 21 years, only on request of a licensed physician and then only to patients who have had a known attack of rheumatic fever within the past two years. Distribution will be made only through physicians who agree to keep their patients under observation at reasonable intervals in order that the West Virginia Heart Association and the state department of health may obtain such information as may be requested. The following procedure is being used in operation of the new program: The physician requests penicillin for his patient through the local health department or through the division of heart disease control of the state department of health, in Charleston. A request blank is then mailed to the physician, to be filled out and returned to the division of heart disease control. On receipt of the form, the division sends the physician at monthly intervals a supply of 100 tablets, each containing 100,000 units of penicillin. Recommendations are enclosed with each package concerning the dosage advised by the medical advisory board of the West Virginia Heart Association. A post card requesting certain information from the physician is enclosed with each shipment. If no penicillin is available, the request is placed on file and shipment made as soon as possible.

ALASKA

Diphtheria Outbreak Controlled.—During an outbreak of diphtheria in the Bethel area, 119 clinical cases and 8 deaths were reported, according to Alaska Department of Health records. Of the eight deaths reported, all were in adults except one in a 10-year-old girl. Medical authorities stated in December, 1952, that the outbreak appeared to be under control.

Poliomyelitis Increases in Late Fall.—As of Nov. 12, 1952, 48 cases of poliomyelitis were reported to the Alaska Department of Health, more than 40 of which were from Ketchikan and Metlakatla. In the 1952 outbreak of the disease in Alaska, only eight cases had been reported between May 5 and Sept. 30, but a sharp upswing in incidence began in October. One death was reported.

GENERAL

Certification for Nutritionists.—The American Board of Nutrition will meet in April to consider applications of candidates for certification as specialists in human nutrition. Application forms may be obtained from the secretary, Otto A. Bessey, Ph.D., University of Texas School of Medicine, Galveston. Completed applications should be in his office not later than March 15.

Myasthenia Gravis Foundation.—The newly formed Myasthenia Gravis Foundation, 480 Lexington Ave., New York, has chosen Dr. Henry R. Viets, Boston, as chairman of the medical advisory board. The foundation will publicize the characteristics of the disease; support research and disseminate information concerning its results as well as information concerning advances in therapeutic procedures; and cooperate with other corporations engaged in similar activities.

Pan-American Association Caribbean Cruise.—The Pan-American Association of Ophthalmology will hold its second interim meeting in February, combining scientific sessions with a two week cruise in the Caribbean on the transatlantic liner Italia. The liner will sail Jan. 31, after the midwinter meeting of the New Orleans Ophthalmological Society, and will visit Kingston, Jamaica; Curaçao; La Guaira and Caracas, Venezuela. On the return trip, stops will be made at San Juan, Puerto Rico, and Havana, Cuba. Reservations may be made through Mr. H. H. Allen of the Allen Travel Service, 550 Fifth Ave., New York.

Council to Combat Blindness Offers Grants.—Applications for the 1953-1954 grant-in-aid awards of the National Council to Combat Blindness will be considered at the annual meeting in the spring. The council encourages applications for grants to projects encompassing the scientific principles that are related to the study of sight—both normal and pathological, including the various branches of biological, chemical, and physical science, and clinical investigative medicine. Completed applications should be received in the office of the council no later than April 15. Forms may be obtained by addressing: Secretary, National Council to Combat Blindness, Inc., 1186 Broadway, New York 1.

Sale of Easter Seals.—According to the National Society for Crippled Children and Adults, in the past 10 years the sale of Easter Seals has grown by more than 500% to a 1952 figure of more than $6,716,000. Last year's services, conducted by Easter Seal affiliates in each of the 48 states, District of Columbia, Alaska, Hawaii, and Puerto Rico, include: 78 diagnostic clinics; 171 outpatient treatment centers, of which 127 received all or almost all their support from Easter Seal funds and the remaining 44 through joint operation; 10 residential centers; 21 rehabilitation centers and curative workshops; 32 planned treatment centers; 97 speech and hearing facilities and services; 187 public school systems receiving assistance; 40 sheltered workshops and homebound programs; 33 craft outlets; and 16 programs of special education.

Society News.—At its annual meeting in New York the Association for Research in Nervous and Mental Disease elected Davenport Hooker, Ph.D., Pittsburgh, president; Dr. John C. Whitehorn, Baltimore, first vice-president; Laurence H. Snyder, Sc.D., Norman, Okla., second vice-president; Dr. Clarence C. Hare, New York, secretary-treasurer; and Dr. Rollo J. Masselink, New York, assistant secretary.——At its annual meeting in Miami, Fla., the Southern Medical Association elected the following officers: president, Dr. Walter C. Jones, Miami; president-elect, Dr. Alphonse McMahon, St. Louis; first vice-president, Dr. Robert L. Sanders, Memphis, Tenn.; second vice-president, Dr. Edward W. Cullipher, Miami; secretary-manager, Mr. C. P. Loranz, Birmingham, Ala.; chairman of the council, Dr. Fred E. Woodson, Tulsa, Okla.; chairman of the board of trustees, Dr. Elmer L. Henderson, Louisville; editor of *Southern Medical Journal*, Dr. Marye Y. Dabney, Birmingham, Ala.——The Central Society for Clinical Research elected these officers for 1953: president, Dr. George E. Burch Jr., New Orleans; vice-president, Dr. Jerome W. Conn, Ann Arbor, Mich.; and secretary-treasurer, Dr. Kenneth G. Kohlstaedt, Indianapolis.

Warning—Itinerant Narcotic Addict.—Hospitals and physicians in the New England and possibly the Middle Atlantic states are warned concerning the activities of an addict who seeks hospitalization for narcotics while feigning renal colic. Since August, 1951, the subject has presented himself to physicians or hospitals as an employee of the Cleveland-Cliffs Iron Company, Cleveland. He gives the name Kenneth C. Scott. He is described as a good talker, about 29 years of age, 5 ft. 9 in. tall, with black hair, ruddy complexion, and stocky build. He claims to be a merchant seaman and a World War II veteran with service in Europe and the Pacific. He relates tales about Korea and shipping on the Great Lakes. The Cleveland firm has refused payment of bills referred to it by various hospitals on his account. The firm states that, because it has not been furnished his Social Security number by these hospitals, it is unable to state definitely that this is the same Kenneth Scott who worked for about one month in 1945 as a watchman on its steamer Pioneer. The Social Security number of the former employee of the Cleveland-Cliffs Iron Company is 197-18-9119.

Fellowships in Child Psychiatry.—Fellowships in child psychiatry are available in a number of member clinics approved as training centers by the American Association of Psychiatric Clinics for Children. The training begins at a third year, postgraduate level with minimum prerequisites of graduation from medical school, a general or rotating internship, and a two year residency in psychiatry, all approved. Most of these clinics have also been approved individually by the American Board of Psychiatry and Neurology for a third year of training and for an additional year of experience. The association states that at the completion of training, attractive openings are available in all parts of the country. Fellows receive instruction in therapeutic techniques with children in outpatient settings that utilize the integrated services of the psychiatric clinic team. Most of the clinics have a two year training period, although a few will consider giving one year training in special cases. Fellowship stipends are usually in line with U. S. Public Health Service standards (approximately $3,600), as these stipends come mainly from the Public Health Service. Special arrangements may be made to supplement the pay by assuming other responsibilities locally (e. g., part-time work with the Veterans Administration or consultation to social agencies). A limited number of training centers can offer higher stipends. Application may be made through the association or directly to the individual clinics, but acceptance of applicants for training is by the individual training centers. For information and application forms, write to Miss Marion A. Wagner, Administrative Assistant, American Association of Psychiatric Clinics for Children, 1790 Broadway, Rm. 916, New York 19.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1953 Annual Session, New York, June 1-5.

1953 Clinical Session, St. Louis, Dec. 1-4.

1954 Annual Session, San Francisco, June 21-25.

1954 Clinical Session, Miami, Florida, Nov. 30-Dec. 3.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago, Secretary.

NATIONAL CONFERENCE ON RURAL HEALTH, Roanoke Hotel, Roanoke, Va., Feb. 27-28. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

AMERICAN ACADEMY OF ALLERGY, Statler Hotel, Boston, Feb. 26-28. Dr. Ben Z. Rappaport, 55 East Washington St., Chicago, Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Drake Hotel, Chicago, Feb. 26-28. Prof. Ralph F. Turner, Michigan State College, Dept. of Police Administration, East Lansing, Mich., Secretary.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Palmer House, Chicago. Jan. 24-29. Dr. John R. Norcross, 122 South Michigan Avenue, Chicago 3, Secretary.

AMERICAN COLLEGE OF RADIOLOGY Palmer House, Chicago, Feb. 6. Mr. William C. Stronach, 20 North Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN ORTHOPSYCHIATRIC ASSOCIATION, Hotel Statler, Cleveland, Feb. 23-25. Dr. Exie E. Welsch, 303 Lexington Ave., New York 16, Secretary.

AMERICAN PROTESTANT HOSPITAL ASSOCIATION, Palmer House, Chicago, Feb. 10-13. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

ATLANTA GRADUATE MEDICAL ASSEMBLY, Atlanta-Biltmore Hotel, Atlanta, Ga., Feb. 23-25. Dr. Mark S. Dougherty, 15 Peachtree St. N.W., Atlanta, Ga., Chairman.

CENTRAL SURGICAL ASSOCIATION, Drake Hotel, Chicago, March 5-7 Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE, Palmer House, Chicago, March 3-6. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago 1, Secretary.

DALLAS SOUTHERN CLINICAL SOCIETY, Baker and Adolphus Hotels, Dallas, Texas, Mar. 16-19. Dr. T. Haynes Harvill, 433 Medical Arts Bldg., Dallas 1, Secretary.

INTERNATIONAL POST-GRADUATE MEDICAL ASSEMBLY OF SOUTHWEST TEXAS, Municipal Auditorium, San Antonio, Texas, Jan. 27-29. Dr. John M. Smith Jr., P. O. Box 2445, San Antonio 6, Texas, Secretary.

MICHIGAN CLINICAL INSTITUTE, Sheraton Hotel, Detroit, March 11-13. Dr. J. M. Robb, 606 Townsend St., Lansing 15, Mich., General Chairman.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY, Municipal Auditorium, New Orleans, March 2-5. Dr. Woodward D. Beacham, 1430 Tulane Avenue, New Orleans 12, Secretary.

PACIFIC COAST SURGICAL ASSOCIATION, Seattle and Harrison, Hot Springs, B. C., Feb. 16-20. Dr. Carleton Mathewson Jr., Stanford University Hospital, San Francisco, Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

COLORADO, Denver, February 17, Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

DELAWARE, Wilmington, Feb. 27. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

KANSAS, Kansas City, March 20. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

VIRGINIA, Veterans Administration Hospital, Hampton, Feb. 26. Dr. John B. McKee, 114 West Boscawen St., Winchester, Chairman.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:

ATLANTA, GA., The Atlanta Biltmore, Feb. 23-24. Dr. William G. Hamm, 384 Peachtree St. N.E., Atlanta, Chairman.

BOSTON, Statler Hotel, March 2-5. Dr. Samuel F. Marshall, 605 Commonwealth Ave., Boston, Chairman.

SALT LAKE CITY, Utah Hotel, Mar. 20-21. Dr. John H. Clark, 349 East First Street South, Salt Lake City, Chairman.

SIOUX VALLEY MEDICAL ASSOCIATION, Sioux City, Iowa, Feb. 24-26. Dr. Edward H. Sibley, 622 Fourth St., Sioux City 9, Secretary.

SOCIETY OF UNIVERSITY SURGEONS, Washington University, St. Louis, Feb. 12-14. Dr. Clarence Dennis, Kings County Hospital, Brooklyn, N. Y., Secretary.

SOUTHEASTERN SURGICAL CONGRESS, Louisville, Ky., March 9-12. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Ga., Secretary.

U. S. CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS, SURGICAL DIVISION MEETINGS:

TRI-STATE ASSEMBLY OF TEXAS, Arkansas and Oklahoma, Adolphus Hotel, Dallas, Texas, Feb. 5-7. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Chairman.

PENNSYLVANIA AND SURROUNDING STATES, Bellevue-Stratford Hotel, Philadelphia, Feb. 13-14. Dr. Moses Behrend, 225 South 17th St., Philadelphia, Chairman.

WESTERN SOCIETY FOR CLINICAL RESEARCH, Carmel, Calif., Jan. 30-31. Dr. Herbert N. Hultgren, Stanford Hospital, San Francisco 15, Secretary.

INTERNATIONAL

CONGRESS OF INTERNATIONAL LEAGUE AGAINST RHEUMATISM, Geneva and Zurich, Switzerland, Aug. 24-29. For information write: Dr. W. Tegner, The London Hospital, London E.1, England.

CONGRESS OF THE INTERNATIONAL SOCIETY OF ANGIOLOGY, Lisbon, Portugal, Sept. 18-20. Dr. Henry Haimovici, 105 East 90th St., New York 28, N. Y., U. S. A., Secretary.

CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY, Lisbon, Portugal, Sept. 14-20. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

EUROPEAN CONGRESS OF ALLERGOLOGY, Stockholm, Sweden, May 20-23. For information write: Dr. Egon Brunn, Gersonavej 8, Hellerup, Copenhagen, Denmark.

INTER-AMERICAN SESSION, AMERICAN COLLEGE OF SURGEONS, Paulista Medical Association Bldg., Sao Paulo, Brazil, Feb. 9-12. Dr. Moacyr Eyck Alvaro, 1151 Conselacao, Sao Paulo, Brazil, Chairman.

INTERNATIONAL CONFERENCE ON THROMBOSIS AND EMBOLISM, Basle, Switzerland, July 15-19, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

INTERNATIONAL CONGRESS OF AUDIOLOGY, Groningen, Netherlands, June 5-6. Dr. Gunnar Holmgren, Strandvagen 5A, Stockholm, Sweden, President.

INTERNATIONAL CONGRESS OF ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY, Boston, Mass., U. S. A., Aug. 18-21. Dr. Robert S. Schwab, Massachusetts General Hospital, Boston 14, Mass., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF HIPPOCRATIC MEDICINE, Evian, France, Sept. 3-6. Prof. P. Delore, 13 rue Jarente, Lyons, France, Secretary-General.

INTERNATIONAL CONGRESS FOR HISTORY OF SCIENCE, Jerusalem, Israel, August 3-7. Prof. F. S. Bodenheimer, Hebrew University, Jerusalem, Israel, President.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Sao Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U.S.A., Secretary-General.

INTERNATIONAL CONGRESS ON MEDICAL LIBRARIANSHIP, London, England, July 20-25. Mr. W. R. LeFanu, % London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1, England, Chairman.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF MICROBIOLOGY, Rome, Italy, Sept. 6-12. For information write: Dr. V. Puntoni, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS OF OTO-NEURO-OPHTHALMOLOGY, Bologna, Italy, May 3-7. Dr. Guiseppe Cristini, Clinica Oculistica, Policlinico, Bologna, Italy, General Secretary.

INTERNATIONAL CONGRESS OF OTORHINOLARYNGOLOGY, Amsterdam, Netherlands, June 8-15. Dr. W. H. Struben, J. J. Viottastraat 1, Amsterdam, Netherlands, Secretary.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Havana, Cuba, Oct. 12-17. Prof. Felix Hurtado, 5a Avenue 124, Miramar, Havana, Cuba, President.

INTERNATIONAL CONGRESS OF RADIO-BIOLOGY, Copenhagen, Denmark, July 14-25. Prof. Flemming Norgaard, Oster Voldgade 10, Copenhagen K, Denmark, Secretary General.

INTERNATIONAL CONGRESS OF RADIOLOGY, Copenhagen, Denmark, July 19-25. Professor Flemming Norgaard, 10 Oster Voldgade, Copenhagen K, Denmark, Secretary General.

INTERNATIONAL CONGRESS OF THALASSOTHERAPY, Dubrovnick, Yugoslavia, May 17-25. Prof. C. Plavaic, Mavrodne Republick 51, Belgrade, Yugoslavia, Secretary General.

INTERNATIONAL CONGRESSES OF TROPICAL MEDICINE AND MALARIA, Istanbul, Turkey, Aug. 28-Sept. 4. Professor Dr. Ihsan Sükrü Aksel, Tunel Meydam, Beyoglu, Istanbul, Turkey, General Secretary.

INTERNATIONAL FERTILITY ASSOCIATION, New York, N. Y., U S. A., May 25-31. Dr. Abner I. Weisman, 1160 Fifth Avenue, New York 29, N. Y., U. S. A., Associate Secretary General.

INTERNATIONAL GYNAECOLOGICAL MEETING, Paris, France, May 22-23. For information write: Dr. Jacques Courtois, 1, rue Racine, St. Germain-en-Laye, Seine et Oise, France.

INTERNATIONAL HOSPITAL CONGRESS, London, England, May 25-30. Capt. J. E. Stone, 10 Old Jewry, London, EC2, England, Hon. Secretary.

INTERNATIONAL LEPROSY CONGRESS, Madrid, Spain, Oct. 3-10. Dr. Felix Contreras, Moreto 15, Madrid, Spain, Secretary.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Montreal, Canada, Aug. 31-Sept. 4. Dr. A. S. V. Burgen, Dept. of Physiology, McGill University, Montreal, Canada, Secretary.

INTERNATIONAL PSYCHO-ANALYTICAL CONGRESS, Bedford College, Regent's Park, London N.W.1, England, July 26-30. Dr. Ruth S. Eissler, 285 Central Park West, New York 24, N. Y., Hon. Secretary.

INTERNATIONAL VETERINARY CONGRESS, Stockholm, Sweden, Aug. 9-15. Prof. Axel Isaksson, Institute of Veterinary Medicine, Stockholm 50, Sweden, Secretary.

PACIFIC SCIENCE CONGRESS, Quezon City and Manila, Philippines, Nov. 16-28. Dr. Patrocinio Valenzuela, College of Pharmacy, University of the Philippines, Quezon City, Philippines, Secretary-General.

PAN AMERICAN CONGRESS OF THE MEDICAL PRESS, Buenos Aires, Argentine, July 12-16. Secretaria del Congress, 763 Uriburu, Buenos Aires, Argentine.

WORLD CONFERENCE ON MEDICAL EDUCATION, British Medical Association House, Tavistock Square, W.C.1, London, England, Aug. 24-29. Secretariat: World Medical Association, 2 East 103d St., New York 29, N. Y., U. S. A.

WORLD CONGRESS OF THE WORLD CONFEDERATION FOR PHYSICAL THERAPY, London, England, Sept. 7-12. Miss M. J. Neilson, Chartered Society of Physiotherapy, Tavistock House, South, Tavistock Square, London, W.C.1, England, Secretary.

WORLD MEDICAL ASSOCIATION, The Hague, Amsterdam, Holland, Aug. 31-Sept. 7. Dr. Louis H. Bauer, 2 East 103d St., New York 29, N. Y., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* All centers where there are five or more candidates. Feb. 9-11, April 20-21 (Part II only), June 22-24 and Sept. 8-10 (Part I only). Candidates may file applications at any time, but the National Board must receive them at least six weeks before the date of the examination they wish to take. Final date for filing application for the February examination was December 29. Exec. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations, July 17. Final date for filing applications is January 17. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various Centers, Sept. 3. *Oral.* Philadelphia, Oct. 16-18. Exec. Sec., Miss Janet Newkirk, 66 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* New Orleans, Feb. 3-6; Boston, April 9-11; New York City, May. The closing date for acceptance of applications for oral examinations in New Orleans, Boston and New York City was January 2 except for candidates in military or Naval Service. *Oral.* San Francisco, Sept. 21-23; Chicago, Nov. 30-Dec. 2. The closing date for acceptance of applications for the San Francisco and Chicago oral examination is April 1. *Oral Examiners in the Subspecialties.* Allergy, New York City, June. Cardiovascular Disease, Philadelphia, April 7 and New York City, May 27. Gastroenterology, Philadelphia, April 10-11. Pulmonary Disease, Boston, April 8 or 9 and Los Angeles, May. The closing date for acceptance of applications is February 1. *Written.* October 19. The closing date for acceptance of applications is May 1. Exec. Sec.-Treas., Dr. William A. Werrell, 1 West Main St., Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June 1953. Final date for filing application for the oral examination was Jan. 15, 1953. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, Kingshighway and Euclid Ave., St. Louis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Various Centers, Feb. 6, 1953. Final date for filing applications was Nov. 1. *Oral and Pathological, Part II.* Chicago, May 17-24, Final date for filing application is Feb. 1. Sec., Dr. R. L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, January 1953. Final date for filing applications was July 1. *Practical.* New York City, June 6-10, 1953. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* New Orleans, April 21-25, 1953. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: *Written and Practical Examination in Pathologic Anatomy and Clinical Pathology.* The examination will include exfoliative cytology. St. Louis, March 28-31. Sec., Dr. Wm. B. Wartman, 303 E. Chicago Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Baltimore, Feb. 20-22; Memphis, March 27-29; Philadelphia, May 1-3; Detroit or Ann Arbor, June; Place undecided, Oct. 9-11 (tentative); Indianapolis, November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION. *Oral and Written.* May 30-31. Final date for filing applications is March 31. *Sec.,* Dr. Robert L. Bennett, 30 N. Michigan Blvd., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: Final date for receipt of case reports for the spring examination (May-June) is January 1 of each year. Final date for receipt of case reports for the fall examination (October-November) is June 1 of each year.

AMERICAN BOARD OF PREVENTIVE MEDICINE: April 23-25, Berkeley, Boston, Baltimore, Minneapolis and New Orleans. New York City, Nov. 7-9. Sec., Dr. Ernest L. Stebbins, 615 North Wolfe St., Baltimore 5.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* For candidates in proctology and ano-rectal surgery. May 9, Kansas City, Minneapolis, Philadelphia and San Francisco. The examination will be in anatomy, physiology, biochemistry and pathology and will be both oral and written. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, April 30-May 1. Sec.-Treas., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Tampa, April 8-15. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1953. Final date for filing application was Dec. 1. Sec., Dr. John B. Flick, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, Feb. 7-11. Sec., Dr. Harry Culver, 30 Westwood Road, Minneapolis 16, Minn.

BOARD OF THORACIC SURGERY: *Written.* Various Centers, Feb. 27. Final date for filing applications was Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Erskine, Arthur Wright ⊕ Cedar Rapids, Iowa; born in Lawrence County, Pa., May 6, 1885; Baltimore Medical College, 1908; chairman, Section on Radiology, American Medical Association, 1930-1931; president of the Linn County Medical Society in 1920, Radiological Society of North America in 1925, Iowa State Medical Society in 1938, and American College of Radiology in 1950, serving as a member of its board of censors in 1951-1952; member of the American Roentgen Ray Society; honorary member of the Chicago Roentgen Society; a cofounder of the Iowa X-Ray Club and secretary from its beginning in 1920 until April, 1952; secretary of the Iowa division of the American Cancer Society, which presented him with a bronze medal and citation as "the Iowan who contributed most to cancer control in 1951"; executive secretary of the cancer committee of the Iowa State Medical Society; developed and made a series of specula for use in x-ray transvaginal treatment of cervical cancer, which was exhibited in London in 1950 at the International Congress of Radiology; member of the Iowa State Executive Cancer Committee, which prepared and distributed a cancer manual for the physicians of Iowa; member of the examining board during World Wars I and II; awarded the Selective Service Medal; a talented woodcarver; received a silver cup from the American Physicians' Art Association, Class A, for a carving exhibited at the American Medical Association meeting in Chicago in 1944; on Oct. 12, 1952, awarded the medal of the American Cancer Society "for distinguished service in cancer control"; established the Erskine physics prize at Coe College in Cedar Rapids and Hiram (Ohio) College; author of "Practical X-Ray Treatment" published in 1931, the fourth edition of which is now at the publishers; head of the x-ray department at Mercy and St. Luke's Methodist hospitals; died Dec. 10, aged 67, of cerebral arteriosclerosis.

Albi, Rudolph ⊕ Denver; Regia Universita di Torino Facolta di Medicina e Chirurgia, Italy, 1900; served as a member of the state board of health and the state board of medical examiners, and as city commissioner of health; awarded citations and decorations from the Italian government for his meritorious social and medical work for Italians who made their homes in Colorado; died in San Jose, Calif., Oct. 23, aged 78, of coronary thrombosis, hypertension, and atelectasis of the right lung.

Anderson, James Martin ⊕ Cross City, Fla.; Atlanta College of Physicians and Surgeons, 1910; died in Mercy Hospital, Miami, Oct. 5, aged 71, of myocardial infarction.

Barchfield, Charles Custer ⊕ Somerset, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1920; died in the Presbyterian Hospital, Pittsburgh, Oct. 30, aged 60, of cardiac failure.

Black, Arthur Lloyd ⊕ Bowman, S. C.; Medical College of the State of South Carolina, Charleston, 1912; served as mayor; died in Lloyd Noland Hospital, Fairfield, Ala., Oct. 19, aged 67, of coronary disease.

Campbell, Mary Page, San Francisco; Cooper Medical College, San Francisco, 1888; died Nov. 16, aged 90.

Cooper, Samuel J., Relief, N. C. (licensed in North Carolina in 1909); died recently, aged 80.

Deal, Benjamin A. ⊕ Statesboro, Ga.; Medical College of Georgia, Augusta, 1909; died recently, aged 67, of myocardial failure and metastatic carcinoma.

Ohlendorf, Clarence, Park Ridge, Ill.; Northwestern University Medical School, Chicago, 1918; died Oct. 20, aged 65, of cerebral hemorrhage.

Olin, Lester Cleo ⊕ Maryville, Tenn.; University of Illinois College of Medicine, Chicago, 1929; served during World War I; formerly health director for Alcoa; on the staff of Blount Memorial Hospital; died Oct. 22, aged 54, of coronary occlusion.

Palmer, Alonzo Trent, Tallulah, La.; Vanderbilt University School of Medicine, Nashville, Tenn., 1916; died Oct. 29, aged 58.

Palombo, Albert S., Brooklyn; University and Bellevue Hospital Medical College, New York, 1927; member of the American Psychiatric Association; served on the staffs of Kings County and Long Island College hospitals; died recently, aged 50, of coronary thrombosis.

Parrish, Marion Franklin ⊕ Sturgis, Mich.; Medical College of Ohio, Cincinnati, 1897; served during World War I; affiliated with Sturgis Memorial Hospital; died in Leila Post Hospital, Battle Creek, Oct. 31, aged 79, of arteriosclerotic heart disease and diabetes mellitus.

Paschall, Adolphus F. ⊕ Puryear, Tenn.; University of Louisville (Ky.) Medical Department, 1890; past president of the Henry County Medical Society; for eight years county judge; died Oct. 18, aged 85, of arteriosclerosis and cerebral hemorrhage.

Paul, Raymond Emerson ⊕ Botkins, Ohio; University of Cincinnati College of Medicine, 1925; member of the American Academy of General Practice; past president of the Shelby County Medical Society and in 1944 secretary-treasurer; affiliated with St. Rita's and Memorial hospitals in Lima; died Oct. 15, aged 51, of Ménière's disease.

Prime, Frederick ⊕ New York; University of Pennsylvania Department of Medicine, Philadelphia, 1905; at one time instructor in surgery at his alma mater; assistant in cancer research at Columbia University College of Physicians and Surgeons from 1913 to 1918, when appointed assistant professor in cancer research, holding this post until 1939; fellow of the New York Academy of Medicine; consulting radiotherapist of St. Luke's Hospital; from 1918 to 1923 associate editor of the *Journal of Cancer Research;* died Oct. 13, aged 71, of aplastic anemia.

Randall, Dwight Theodore ⊕ Los Angeles; College of Medical Evangelists, Loma Linda and Los Angeles, 1929; certified by the National Board of Medical Examiners; affiliated with St. John's Hospital in Santa Monica; died in Santa Monica (Calif.) Hospital Oct. 9, aged 48, of coronary artery disease and miliary tuberculosis.

Sorna, Marie ⊕ Chicago; College of Medicine and Surgery (Physio-Medical), Chicago, 1908; died Nov. 28, aged 74, of chronic myocarditis.

Strickland, John Howard, Alice, Texas; University of Texas School of Medicine, Galveston, 1937; served during World War II; killed in a plane crash near Sinton Nov. 14, aged 41.

Strittmatter, Louis Edward ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1922; affiliated with St. Mary's Hospital; died Oct. 31, aged 58, of coronary thrombosis.

Tannenbaum, Samuel ⊕ Brooklyn; Rush Medical College, Chicago, 1931; affiliated with the Jewish Hospital; died Sept. 25, aged 51.

Tavlin, Robert Cedric ⊕ Okeene, Okla.; University of Illinois College of Medicine, Chicago, 1943; served during World War II; died Nov. 30, aged 32.

Van Stone, Wilfred Douglas ⊕ Denver; Harvard Medical School, Boston, 1919; affiliated with Mercy Hospital; died Oct. 22, aged 61, of peptic ulcer.

Wells, Lorenzo D., Kirkersville, Ohio; Rush Medical College, Chicago, 1900; died Nov. 19, aged 78, of cerebral hemorrhage.

Whitmore, Ray Close ⊕ Hancock, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1906; affiliated with St. Joseph Hospital; died Oct. 28, aged 69, of mitral insufficiency and coronary infarction.

Woodman, Alice Josephine B. Hopkins ⊕ Brookline, Mass.; Tufts College Medical School, Boston, 1907; died Aug. 6, aged 79.

⊕ Indicates Member of the American Medical Association.

GOVERNMENT SERVICES

DEPARTMENT OF DEFENSE

Donations for Amputee Clinic at Seoul.—The I Corps Korean Childrens Amputee Clinic, backed by $75,872.89 in voluntary contributions, was established Dec. 17, 1952, at Severance Hospital in Seoul. The Childrens Amputee Fund drive was originated four months ago by Lt. Gen. Paul W. Kendall, commanding general of I Corps. The clinic will accept all patients on a nonsectarian basis and will be supervised by a joint civilian-military committee. The money has been sent to the National Council of Churches of Christ in the United States, which will be trustee for the amputee fund.

Working closely with the Amputee Clinic are Dr. Reuben A. Torrey Jr., director of the Christian Project for the Rehabilitation of Korean Amputees, an amputee himself, and Dr. Florence J. Murray, Halifax, Nova Scotia, Canada, assistant superintendent of the hospital, member of the medical staff, and instructor in the medical school for 35 years.

Severance Hospital, named for a wealthy American family that donated funds for its construction, was founded in 1884 as the first modern hospital in Korea. It is supported by mission boards of Presbyterian, Methodist, and United churches of the United States, Canada, and Australia. Its medical school, which has produced 35% of all physicians now in Korea, has 1,300 graduates and a present enrollment of more than 100. Its nurses training school has 500 graduates. The hospital staff is headed by Dr. Chang Mo Moon, a graduate of its medical school, as are most of the 10 staff physicians. Graduate nurses include 20 Koreans, 2 Americans, and 1 Canadian.

The money for the clinic was raised by Korean and American civilians and soldiers, sailors, airmen, and marines from at least 13 nations fighting Communist aggression in Korea. Front-line divisions contributed more than $50,000, and I Corps non-divisional units added another $15,000. The largest Korean donation came from the 101st Division, Korean Service Corps, which contributed 18,813,000 won ($3,136). The 3d Division led all units with $17,306.59 in contributions. Other large donations included $15,141.85 from the 1st Marine Division, $10,991.55 from the 2d Infantry Division, and $6,638.84 from the 1st Commonwealth Division. Air Force units gave $2,195. An additional $55 was donated by crewmen of the hospital ship USS Repose.

PUBLIC HEALTH SERVICE

Thirty-Two Roving Epidemiologists.—Roving epidemiologists of the Public Health Service assisted state and local health departments in controlling more than 200 epidemics and 3 flood disasters during 1952. Surgeon General Scheele has announced that this was 10 times greater than the average number of epidemic and disaster calls answered in recent previous years due to the fact that 1952 was the first full year of operation of the Epidemic Intelligence Service, a mobile corps of 32 epidemiologists attached to the Communicable Disease Center at Atlanta, Ga. This cadre of specialists, now organized into a nationwide network, not only provides improved investigation services to the states, but provides also an opportunity for those young physicians to gain experience and skill.

The Epidemic Intelligence Service is a part of the Communicable Disease Center's Epidemiology Branch, headed by Dr. Alexander D. Langmuir, of Atlanta. When not quelling epidemics, the 32 Epidemic Intelligence Service medical officers are assigned to state or local health departments, schools of medicine or public health, or other research laboratories strategically located in 16 states from coast to coast. At those posts they carry on continuing epidemiological investigations.

Dr. Scheele said that the outbreaks studied in 1952 included 36 categories of diseases. There were 18 epidemics of infectious hepatitis, 8 each of poliomyelitis and encephalitis (an infectious, mosquito-borne virus disease sometimes resembling poliomyelitis), and 1 or more outbreaks of anthrax, brucellosis, German measles, infectious mononucleosis, influenza, malaria, psittacosis, rabies, suspected smallpox, typhoid fever, and others.

On two occasions in 1952 the Epidemic Intelligence Service sent epidemic consultants on overseas missions. An epidemiologist was lent to the World Health Organization of the United Nations for seven weeks in April and May to study and make recommendations for controlling a widespread outbreak of epidemic meningitis in Khartoum, Anglo-Egyptian Sudan, Africa. Again in collaboration with the World Health Organization, the Epidemic Intelligence Service dispatched an epidemiologist to Greenland in December to observe an epidemic of poliomyelitis in Godthaab. The Public Health Service also reported that, on three occasions in 1952, it sent specialists, equipment, and supplies to combat flood disasters. As in the case of epidemic aid, disaster assistance was rendered when state health departments requested it. The teams were made up of as many as 10 experts, and they utilized at various times sewer cleaning devices, pumps for relieving flooded community water works, mobile water purification units, light traps for catching mosquitoes, automotive and hand spraying equipment, and a spray plane with pilot. From April until June, the service furnished emergency assistance to Iowa and Nebraska in controlling health hazards created by the Missouri River flood. In May and June, similar aid was given to Utah when flood waters caused by melting snows inundated some 25,000 acres in five counties in Salt Lake Valley. Before that emergency was brought under control, flash floods in two areas of Texas required the assignment there of Public Health Service personnel.

California requested the Communicable Disease Center's assistance in meeting two concurrent disease outbreaks. Dr. Wilton L. Halverson, director, California State Department of Public Health, on July 31 reported to the Public Health Service that the state's Central Valley was experiencing the greatest seasonal incidence of mosquito-borne encephalitis ever observed in California. To meet that emergency, the state health department was throwing its full resources into a gigantic control and research program, called Operation Culex tarsalis, after the mosquito that was the principal vector. At Dr. Halverson's request, the Public Health Service supplemented the state's facilities by flying in 34 specialists—medical epidemiologists, sanitary engineers, entomologists, and veterinarians. They became, for the period of the study, members of the state team, totalling more than 300 persons. More than 725 cases of encephalitis were recorded in California during the epidemic, giving the state more than half the total incidence reported in the United States in 1952. More than 375 of those cases were confirmed by laboratory tests, and there were more than 40 deaths attributed to encephalitis.

While California's public health resources were extended to meet the encephalitis threat, a small-scale, but important, outbreak of malaria occurred elsewhere in the state. This was the first evidence of local transmission of that disease in California since 1945 and the first in that county since 1939. Again, the California State Department of Public Health requested the services of two investigators, this time an entomologist and a nurse-epidemiologist. Working with state personnel, they found that about 1,500 camp fire girls had attended four camps near Nevada City, Calif., during the summer, but by the time the first cases were reported the girls had scattered over a wide area. During the incubation period of the disease at least nine of the girls were stricken with malaria. Working with private physicians and local health departments, the investigators studied health records, drug store chill-tonic sales, mosquito prevalence, and military leave records. The clues in the mystery finally pointed to the probable source: a discharged Marine who had served in Korea and who had camped out in the mosquito-infested woods a mile or two from the girls' camp during the July 4 week end. While sleeping in the open, he suffered an acute malarial relapse

with chills and fever and the next day entered a hospital many miles distant.

Tennessee witnessed another instance of camp-contracted disease, spread throughout the state when an encampment was dismissed. Dr. R. H. Hutcheson, commissioner, Tennessee Department of Public Health, reported that in mid-July an outbreak of gastroenteritis occurred in a church camp in middle Tennessee. A study, including an examination of the food handlers, was made on the scene immediately following closing of the camp. In August, the state health department received reports from various sections of the state that infectious hepatitis cases were cropping up among those who had been at the camp. Dr. Hutcheson asked the Communicable Disease Center for epidemiological assistance. The investigation showed that more than 100 cases of infectious hepatitis had occurred among the 290 campers. There was no causal relationship between that disease and the earlier evidence of gastroenteritis—both were spread simultaneously, but infectious hepatitis showed up late because it has a longer period of incubation within the patient. The dates of onset indicated a common source of infection, and the earlier investigation had suggested water as the vehicle of transmission. With those facts established, the roving epidemiologists unravelled the mystery by performing a simple test. They placed a fluorescent dye into the commodes in three cabins located above a spring that was the source of water supply for the camp. An hour and a half later, the dye appeared in the spring. Their report summed up their findings: "Undoubtedly, a camper with a mild case of infectious hepatitis, or a carrier of the virus, was living in one of the cabins."

Regular Corps Examination for Medical Officers.—A competitive examination for appointment of medical officers to the regular corps of the U. S. Public Health Service will be held May 5-7 at a number of points throughout the United States. Applications must be received no later than March 24, 1953. Appointments will be made in the grades of assistant surgeon and senior assistant surgeon. In making assignments, consideration is given to the officer's preference, ability, and experience; however, all commissioned officers are subject to change of station and assignment as necessitated by the needs of the service. Appointments are permanent and provide opportunities to qualified physicians for a life career in clinical medicine, research, and public health.

Both grades require United States citizenship and graduation from a recognized school of medicine. For assistant surgeon, applicants must have at least 7 years of collegiate and professional training and appropriate experience, and for senior assistant surgeon, at least 10 years of collegiate and professional training and appropriate experience. There will be a written professional examination and a physical examination.

Entrance pay for an assistant surgeon with dependents is $6,017 per annum, and for senior assistant surgeon with dependents, $6,918. These figures include the $1,200 annual additional pay received by medical officers, as well as subsistence and rental allowance. Provisions are made for promotion. Retirement pay after 30 years of service or at the age of 64 is three-fourths of annual basic pay at the time of retirement. Additional benefits include periodic pay increases (time served as a member of the armed forces is credited), 30 days annual leave, sick leave, full medical care, and other privileges. Information may be obtained from the Chief, Division of Commissioned Officers, Public Health Service, Washington, D. C.

Appoint Assistant Surgeon General.—Justin M. Andrews, D.Sc., has been appointed Assistant Surgeon General and associate chief of the Bureau of State Services. Dr. Andrews is at present chief of the service's Communicable Disease Center in Atlanta, Ga. The Surgeon General also announced that Dr. Theodore J. Bauer, now chief of the Division of Venereal Disease of the Public Health Service, in Washington, will replace Dr. Andrews in Atlanta on Jan. 5. Dr. Andrews, a native of Rhode Island, received a degree of doctor of science from Johns Hopkins University. After 12 years of university teaching, he became director of the Division of Malaria and Hookworm Service for the Georgia State Department of Public Health. During World War II he served in Europe and the Pacific area. He was chief malariologist in several theaters of war and received the Legion of Merit award for his work in the Mediterranean theater. In his new job, Dr. Andrews will direct the Bureau of State Services' program in applied research in the various disease control programs of the bureau. In addition to the Communicable Disease Center in Atlanta, the bureau operates the Environmental Health Center in Cincinnati and the Arctic Health Research Center in Anchorage, Alaska.

New Branches in Cancer Institute.—Two new branches have been established in the National Cancer Institute, Bethesda, Md., for orientation of its work to research programs in the Clinical Center at the National Institutes of Health. Dr. Roy Hertz, assistant clinical professor of medicine, George Washington University School of Medicine, Washington, D. C., who headed the former endocrinology branch, has been named chief of the new research medicine branch. Dr. Robert R. Smith, chief surgeon of the National Cancer Institute, will serve as acting chief of the new clinical medicine and surgery branch.

Fluoridation of Water Supplies.—As of Nov. 19, there are 479 towns in the United States using water to which fluoride has been added, according to the Division of Dental Public Health, Public Health Service. These communities have a population totalling 9,972,000 persons. Washington, D. C., is the largest city in this group, and San Francisco is the second largest. In addition, 353 towns, totalling 17,280,000 population, have officially approved this action, although fluoridation has not yet been started. The states with the highest number of communities using fluoridated water are: Wisconsin 90, Maryland 63, Kentucky 37, Michigan 27, and Minnesota 24.

VETERANS ADMINISTRATION

Appoint Dr. Ireland Chief of Surgical Division.—Dr. Paul Ireland of Denver has been appointed chief of the surgical division, Department of Medicine and Surgery, in the Veterans Administration. He is a son of the late Major Gen. Merrittee W. Ireland, Surgeon General of the Army from 1918 to 1931. Dr. Ireland has been chief of the surgical service in the VA Hospital at Denver and for five years was chief of the surgical service in the VA Hospital at Fort Logan, Colo. Before joining the Veterans Administration, he was a member of the staff of Parkview Hospital and chief of the surgical staff of St. Mary's Hospital, both in Pueblo, Colo. During World War II he served in the Army Medical Corps.

New Hospital Managers.—Dr. Ralph S. Metheny, for many years a member of the Army Medical Corps and since 1946 with the Veterans Administration, will manage the new VA Hospital at Syracuse, N. Y., which will open next spring.——Dr. Oliver W. Greer, who practiced medicine in Indianapolis for many years and since 1946 has been with the Veterans Administration, will manage the VA Hospital at Newington, Conn.——The new manager of the large VA Tuberculosis Hospital at Oteen, N. C., is Mr. Phillip L. Collins, who has had about 17 years' experience in VA Hospitals as business manager, assistant manager, or manager.

Personal.—Dr. Tiffany Lawyer Jr., an associate in neurology at Columbia University, has been appointed chief of the neurology section of the psychiatry and neurology division, Veterans Administration Department of Medicine and Surgery, succeeding Dr. Pearce Bailey, who resigned to accept a position as director of the Institute of Neurological Diseases and Blindness of the U. S. Public Health Service. Dr. Lawyer is a diplomate of the American Board of Psychiatry and Neurology.——Dr. Raymond Feldman of Denver has been appointed chief of the outpatient section, Psychiatry and Neurology Division, in the Washington, D. C., Central Office of the Veterans Administration, succeeding Dr. John D. Schultz Jr., who resigned to become director of the psychiatric outpatient program at Georgetown University, Washington, D. C.

Hospital News.—Dr. Gustav Bychowski, assistant clinical professor of psychiatry at New York University, addressed the hospital staff at the VA Hospital, Northport, Long Island, N. Y., on Nov. 21, 1952, on "Latent Psychoses."

FOREIGN LETTERS

ARGENTINA

The Transformation of the National Academies.—The Argentine National Academies were, for a long time, free scientific and scholarly corporations with a venerable tradition. The oldest was the Academy of Medicine, founded by Rivadavia in 1822. For many years the academies supervised the professional schools of the university, but in 1918 a separation was established, and from that time the medical school, for example, was governed by a council elected by the professors, the dean being chosen by the council for a period of three years. Under President Perón's present regime, the dean is now chosen by the rector (or president of the university), who is himself appointed by the president of the republic. Until now the academies have remained free as private institutions, enjoying complete autonomy and devoted only to the advancement of knowledge. The members were elected for life by the academicians themselves, who could annul the appointment only in case of sickness, unjustifiable absence from the meetings for a year, or unworthy conduct. The National Academy of Medicine had 35 members and many corresponding and honorary members, both Argentine and foreign. It had private funds and endowments and owned an important building with many research departments. The institution also received a considerable grant from the government.

Last year congress passed a law authorizing President Perón to reorganize the academies. The reason given was that all institutions in the country must conform to the ideals of the Peronistic revolution. Recently the executive power has decreed new rules for the organization of national and private academies. Their role as before is to preserve and diffuse culture and support scientific research. Like their predecessors, they will advise the government when their opinion is asked. In the meantime the new statutes establish that all members of the academies over 60 years of age retire from their positions. With this provision many of the most distinguished intellectuals in the country have been separated from the academies, although they were originally nominated for life; among them are Drs. B. A. Houssay, Mariano Castex, A. Sordelli, and E. Larreta. Several of the members under 60 have already resigned.

A central academic council has been set up. Its members are the chairmen of the National Academies, and the secretary for education will be its president. It will distribute grants from public funds to the national and private academies, and it will submit to the president of the republic the names of new members proposed by the academies, stating their approval or veto. The chairmen themselves will be chosen by the president of the republic from a list of three names in each case, proposed by the Academic Council. The appointment will last three years, but the holder may be reelected. Every new academician will be selected by the president of the republic from a list of three names proposed by each academy and supported by the Academic Council. As can be seen, from now on the academies are no longer free corporations but institutions directly submitted to the President of the Republic. The last remnants of academic freedom in Argentina thus appear to have been swept away.

Law on Practice of Medicine in Entre Ríos.—A new law on the exercise of the medical profession was approved by the house and the senate of the province of Entre Ríos and promulgated by the governor. The new law of 316 articles has produced surprise and alarm in the medical profession of Argentina, and many medical associations have asked for its abrogation. According to this law, the practice of medicine is a social function and the state has the right of intervention in the professional activities. Medicine is an ethical and political activity and consequently should be directed by the state. The physician, who is an agent of the state and has a public function, is obliged to be a member of the College of Physicians established by the law. The authorities of the college are elected by the members, but the nominations are subjected to the approval of the Ministry of Health; the college will be a collaborator of the Ministry of Health and also will establish the professional fees every year. Furthermore, the law proposes that the superior sanitary government be ruled by the Corporative Council of Health, an organization of the government of the province; that the government have the power of intervention or dissolution of all these institutions or any other medical association at any moment; and that medical fees be established every year by the government with the advice of the Corporative Council of Health, the General Confederation of Labor, the Industrial Corporation, and other similar groups.

All prescriptions, laboratory analyses, and radiographs or electrocardiograms will be recorded on three forms: one for the patient, one for the physician's files, and a third, which must be sent to the Ministry of Health in the next 24 hours. A certificate of the first examination of every patient, with indication of diagnosis and treatment, also should be sent to the ministry in the next 48 hours. The police can oblige any physician to assist a patient if he has refused to do so. The physician cannot leave the city or stop his professional activities without permission from the Public Health Ministry, and he must send any information required by the authorities for statistical information. The physicians must obey all the orders on his medical service issued by the professional colleges, the professional corporations, or the Ministry of Health. All infractions of the law or lack of obedience will be punished by fines, imprisonment (one to six months), or retirement of professional license. Any inspector or functionary of the Ministry of Public Health can enter the professional office during the medical activities and can obtain the aid of the police, if necessary. The offices can be closed at any moment if infractions of the law are verified. All punishment will be announced by radio, newspapers, and on a large placard on the front door of the physician's home. In fact, denunciation of any violation of the law is compulsory. Ninety articles of the law consist of regulations for fines, imprisonment, and court and justice procedures for infractions to the law. This new law shows very little respect for the ethics of medicine and for the physicians.

Twenty-Third Argentine Congress of Surgery.—The annual Argentine Congress of Surgery will be held in Buenos Aires, Oct. 5 to 10, with Dr. Juan Martín Allende presiding. Reports will be presented on: (1) mega-esophagus and its surgical treatment, by P. M. Barreto (Brazil) and R. C. Ferrari (Argentina); (2) traumatic lesions of the hand, by J. Valls (Argentina), T. Gebauer (Chile), and R. G. Pulvertaft (England); and (3) diverticulosis colosigmoidea, by A. Canonico. A special symposium on early diagnosis of acute ileus will be directed by R. Pasman, J. A. Ferreira, J. E. Rivarola, and J. V. Uriburu. Another symposium on open traumatic lesions of legs and arms will be directed by C. E. Ottolenghi (Buenos Aires), R. G. Pulvertaft (England), J. Sgrosso (Rosario), and G. Allende (Córdoba). On four mornings, the members of the congress will observe operations in hospitals of Buenos Aires that will be followed by panel discussions and presentation of clinical cases.

Previous Training for Universities.—Until recently it was necessary to finish the primary and secondary school before being admitted to the universities. In many professional schools, entrance examinations were established for the selection of the students with sufficient previous training for the university. Recently, all the Argentine universities have suppressed these examinations. In the University of Eva Perón (formerly La Plata) by a new decree of its president, any person over 22 years of age can be accepted without certificates of primary and secondary studies, if they can pass an entrance examination. This surprising new rule, with suppression of all previous preuniversity regular studies, was unexpected and has no precedent in this country.

The items in these letters are contributed by regular correspondents in the various foreign countries.

Scientific Societies.—The present rules for all scientific societies is that, 15 days or more before the meetings take place, there must be requested permission from the police to whom there must be sent the list of speakers and the title of papers to be reported. A policeman, sergeant, or officer of the police is present during every scientific meeting. Up to now all medical societies have obtained this permission in due time and have functioned without interference of any kind. Recently, however, some other important cultural institutions have not been allowed by the police to have their meetings, and for this reason their activities have stopped, as is the case of the Sociedad Cientifica Argentina (80 years old) and the Colegio Libre de Estudios Superiores. Many memorial meetings have not been permitted, for instance, a tribute to Prof. Amado Alonso, who recently died at Harvard University.

First Latin American Congress of Obstetrics and Gynecology.—The Society of Obstetrics and Gynecology of Buenos Aires has organized the First Latin American Congress of Obstetrics and Gynecology, which is at the same time the Eighth Argentine Congress. The meetings will be held in Buenos Aires, from Oct. 26 to 31, and the chairman will be Dr. Normando Arenas. The problems to be discussed are analgesia and anesthesia in obstetrics, by Dr. O. Rodríguez Lima (Rio de Janeiro) and S. L. Sala (Buenos Aires); premature birth, by L. M. Machado (Belo Horizonte) and M. M. Torres (Argentina); ovarian insufficiency, by E. Bunster (Chile) and P. Rigueroa Casas (Rosario); and mammary carcinoma, by R. Leborgne (Uruguay) and A. E. Nogués (Argentina).

Retirement of Professors.—Some professors of the Medical School of Buenos Aires have been retired: A. Landivar (surgery), M. Soto (pharmacology and therapeutics), N. Dimitri (neurology), E. Castaño (urology), and N. Palacios Costa (obstetrics). These were some of the professors who are between 65 and 70 years of age and who have filled the conditions that allow them to have full retirement salaries.

AUSTRALIA

Red Cross Faces Crisis.—The Australian Red Cross Society has spent £500,000 of its wartime surplus since 1945 and is now short of funds. The deficit for the past three years has been more than £200,000. This year's appeals have been disappointing, because most of the states did not reach their goals financially. Top priority is for sick and wounded from Korea, disabled ex-service women and men, and prisoners of war. These services will be the last affected. Recreational therapy work in hospitals has been reduced. Such therapy includes libraries, handicraft services, and transport of patients. Other activities that met a community need not supplied by governments or other voluntary agencies would not be reduced. In Queensland, the blood transfusion service is subsidized by the state government to the extent of 93% of its expenses.

Thallium Poisonings Increase.—The deaths of 10 persons in New South Wales have been proved or are suspected of being the result of poisoning by thallium, an ingredient of four brands of rat poison. One woman was suspected of having poisoned two husbands with this chemical. She has been tried and found guilty of the murder of one of them. The National Health and Medical Research Council met in Canberra this month, and a decision will be made on uniform control of poisons. The control of dangerous drugs is a responsibility of each separate state. Queensland has banned the sale of materials containing thallium, but such were freely available on the open market in New South Wales.

Record Low Maternal Death Rate.—A death rate of 1.18 per 1,000 live births for 1951 established a new record for Queensland. This rate is now about a quarter of what it was 25 years ago. There are many reasons advanced for this improvement. Most women in Australia now have their babies in hospitals. The standard of hospital equipment and facilities has improved, many of the poorer class of lying-in hospital having been closed. Training of physicians and nurses has improved. The emphasis in medical training is to produce a competent and resourceful general practitioner. It is claimed that the Australian medical schools in Sydney, Melbourne, Adelaide, and Brisbane graduate a medical practitioner who is the equal of those graduated from any other medical school in the world. The course now takes virtually seven years to complete, since a year of hospital experience is now compulsory, prior to full registration.

Other factors in the low maternal death rate are the use of antibiotics, and the availability of blood for transfusion. Puerperal infections are almost unknown. Cesarean section is now performed more than twice as frequently as it was five years ago, the incidence in the large hospitals now being just over two per hundred deliveries. This is a low figure in comparison to American and British hospital experience, but consideration should be given to the higher proportion of home deliveries in other countries. The maternal mortality from cesarean section is now less than 1%. The lower segment operation has almost entirely replaced the classical. The incidence of embolism is now one of the three leading causes of death following cesarean section (the others being shock and hemorrhage). In some hospitals, anticoagulant therapy is now a routine puerperal procedure. At the Women's Hospital in Melbourne, hexamethonium is being used to relieve hypertension during pregnancy.

Blood Group Reference Laboratory.—At the Commonwealth Serum Laboratories in Melbourne, two serologists, Mr. Roy T. Simmons and Dr. J. J. Graydon, have established themselves as world authorities in genetic research. For 13 years, this has been their scientific hobby, quite apart from routine full-time duties in a institution primarily devoted to the commercial production of biologicals. Physicians scattered throughout the southern hemisphere refer their blood-grouping and compatability problems to them. The Wenner-Gren Research Foundation in New York and the University of California support their work.

By studying the blood group systems of thousands of natives, rare inherited blood similarities are being found in widely separated races. Similarity of genes in the Australian aborigine, the Chenchus of southern India, and the white race suggests a common origin. The American Indian and the New Zealand Maori have a common blood denominator. This might support the Kon Tiki theory that the Polynesians drifted across the Pacific. There is no serological evidence that the Polynesians originated from a group pushing southeastward from Asia through Micronesia. The American Indian and the Polynesian Maori today lack particular common blood genes held by the Micronesians and Melanesians. The primitive hairy Ainus of Japan's northern island of Hokkaido have a blood component similar to the white races. These Ainus are also closely related to the Japanese. Simmons and Graydon exchange testing serums with other blood group reference laboratories throughout the world. They provide a clearing house for routine Rh testing serums in Australia. This testing serum is provided free of cost, but those institutions receiving it are expected to take blood from suitable donors of high titer antibodies and forward it to the clearing house.

Failure of New Cancer Treatment.—Last September a method of cancer treatment was developed by two Sydney physicians, F. A. Maguire and Mabel McElhore. The treatment used a combination of corticotropin, aureomycin, and blood transfusion. Early results seemed encouraging, but it is now reported that the last of the series of 10 patients has died. No claim was made that a cancer cure had been discovered, but these protestations notwithstanding, wide publicity was given to the therapy. Dr. F. A. Maguire, a gynecologist of high standing and an outstanding lecturer on his subject at the University of Sydney, was director general of medical services of the Australian army during the early part of World War II.

Two Eye Banks in Australia.—Melbourne and Brisbane now have eye banks to facilitate cornea transplants. An appeal has been made for volunteers to bequeath an eye to the Brisbane bank when they die.

LONDON

Isoniazid and Tuberculosis.—An interim report of the clinical trial being carried out by the tuberculosis chemotherapy trials committee of the Medical Research Council has now been published. This is based on the findings in 331 patients who had completed at least three months' treatment. These fall into three main groups: (1) acute, rapidly progressive pulmonary tuberculosis (105 cases), (2) other forms of pulmonary tuberculosis suitable for chemotherapy (157 cases), and (3) chronic forms of pulmonary tuberculosis unlikely to respond to chemotherapy (69 cases). In the entire series, 173 patients were treated with isoniazid (200 mg. administered daily in two 100 mg. tablets given at 12-hour intervals, by mouth) and 158 with streptomycin (1 gm. administered intramuscularly daily) plus *p*-aminosalicylic acid (PAS) (20 gm. of the sodium salt administered daily, in four doses, by mouth). Toxicity with isoniazid therapy was "a very minor problem"; 107 patients had no toxic manifestations whatsoever. The side-effects recorded were drowsiness in 13 cases, increase of deep reflexes in 23, tremors of the limbs in 21, twitching of limbs in 2, disturbance of micturition in 3, "nervous" reactions in 4, constipation in 9, flushing of the face in 3, hemoptysis in 7, and skin disturbances in 4. It is pointed out that these findings do not rule out the possibility of toxicity from longer-term treatment, from repeat courses, or from a larger daily dose. Apart from gain in weight, there was little difference between the results in the streptomycin plus *p*-aminosalicylic acid group (SP group) and those in the isoniazid group (H group). Thus, the general condition showed a 2+ improvement in 22% of the SP group and in 32% of the H group. At the end of three months 67% of the originally febrile patients in the SP group were afebrile, compared with 56% of the H group. In patients with a sedimentation rate of over 20 before treatment, the value returned to normal in 22% of the SP group and 20% of the H group. Radiographic assessment showed a 2+ or 3+ improvement in 29% of the SP group and in 26% of the H group. In the SP group there was radiological deterioration in 1% and three deaths, while in the H group, radiological deterioration occurred in 6% and there was one death. The proportion of patients becoming bacteriologically negative by the end of the second month was 26% in the SP group and 23% in the H group. The average gain in weight was 6 lb. (2.7 kg.) in the SP group and 11 lb. (5 kg.) in the H group.

The disturbing feature of the investigation was the development of bacillary resistance to isoniazid; this was found in 11% of the patients at the end of one month's treatment. By the end of the second month, it had risen to 52%, while at the end of the third month the incidence was 71%. Lack of progress, as assessed by radiological changes, was found to be related to the emergence of drug resistance. The effect of combining streptomycin with isoniazid on reducing the high incidence of resistance is being investigated, and preliminary observations suggest that, in infections with streptomycin-sensitive bacilli, this combination may be effective. With the proviso that the emergence of drug resistance is "a most serious problem affecting the use of isoniazid," the conclusion was that, judging wholly from short-term results, isoniazid is a very effective drug in pulmonary tuberculosis, but given alone it is not more effective than streptomycin plus *p*-aminosalicylic acid.

New Health Center.—After a long period, new health centers are at last being built. The latest and most ambitious so far is one that has just been built by the London County Council on the Woodberry Down housing estate in north London, at a cost of £151,000. It is a two-story building, on a site of 1½ acres, and contains five units: a general medical and dental practitioners' unit, a school-health unit, a child-welfare unit, an antenatal unit, and a remedial-exercise and child-guidance unit. Each unit has its own entrance. The ground floor is occupied by the general practitioners', the antenatal, child-welfare, and school-health units and by the foot clinic. On the upper floor are the dentists' unit, the minor-operations theater, the eye room, the physicians' side-room, the ultraviolet and remedial exercises room, the child-guidance unit, and staff refreshment and common rooms. Six general practitioners will run their practices from the center, and each physician's suite consists of a waiting room (14 by 12 ft.), a consultation room (14 by 12 ft.) and an examination room (9 by 8 ft.). There are washbasins in the consulting and examination rooms. A door leads directly from the consultation room to the main corridor so that patients need not return to the waiting room. There is also a bedroom and bathroom for the physician who is on duty for night calls, as well as a common room for the medical and dental staff, with a small kitchen attached. There are about 60 physicians in practice within a mile of the center, and it is from these that the six physicians to use the center will be chosen. The precise terms have not yet been announced, but each practitioner is to be asked to pay a certain sum in return for the facilities he will have in the center. The sum is to be based on an estimate of what it costs to provide comparable facilities in a private house, and the sum of £350 a year has been suggested. The cost of running the center will be about £34,000 a year.

Stress Incontinence.—At the 13th British Congress of Obstetrics and Gynaecology in July, Dr. Albert H. Aldridge of New York emphasized the importance of infection in aggravating the symptoms of apparent stress incontinence. Most patients could be treated satisfactorily by a vaginal plastic procedure; relatively few require the more elaborate sling operations. Of the latter, Dr. Aldridge considered those procedures carried out from both above and below to be the safest, since there is less chance of urethral damage, and since it is also possible to place the sling more accurately.

Prof. T. N. A. Jeffcoate and Dr. H. Roberts threw light on the problem by a remarkable series of lateral x-ray pictures. Normally there is a sharp angle between the urethra and the bladder base, posteriorly, but during micturition the angle is obliterated. In cases of prolapse without stress incontinence, although the bladder neck might descend considerably, this posterior urethrovesical angle was constantly present. In patients suffering from stress incontinence no such angle could be demonstrated. Professor Jeffcoate emphasized that it was neither descent of the bladder neck nor apparent funnelling in this region that was the important factor, but the absence of the posterior urethrovesical angle. When a subsequent x-ray picture was taken any successful operation for this condition could be shown to have had the effect of reestablishing this posterior angle.

Official or Proprietary Drugs?—The following excerpts are from the address given by Prof. David Campbell, president of the General Medical Council and regius professor of materia medica and therapeutics in the University of Aberdeen, at the opening of the 111th session of the University of London School of Pharmacy. In view of his position as president of the General Medical Council, the body responsible for the publication of the British Pharmacopoeia, the maintenance of the Medical Register, and the discipline of the medical profession, these comments, though not official, must be looked on as representing a point of view that is receiving sympathetic consideration in official circles.

"The danger now is excessive and inaccurate medication. And that danger is not lessened by persistent advertisement in the form of quasi-scientific and clinical dissertations which are showered so freely on the medical profession by various drug firms, often of the same drug under half a dozen or so different names. . . . It may be that the National Formulary and the deliberations of the Cohen Committee will help to solve the problem in this country. But I doubt it. Now that we are to have a quinquennial publication of the British Pharmacopoeia with addenda in the years between, I suggest that it is worth considering whether, save for experimental purposes, prescribing in the National Health Service should be confined to drugs and preparations made official in the Pharmacopoeia. Such a policy in my view would lead to no loss of efficiency—in fact, it would improve it. And it would be less expensive to the community."

Tobacco and Cancer.—In a recent issue of *The Lancet*, Liverpool workers have tried to throw further light on the topical problem of the relationship, if any, between smoking and carcinoma of the lung. Their observations are based on a study of 100 cases of proved carcinoma of the lung (93 men and 7 women) and 200 control patients. Of the 93 men with carcinoma of the lung, 5 (5.4%) were nonsmokers, and of the 7 women, 4 (57.1%) were nonsmokers. The corresponding figures for the 186 male controls and 14 female controls were 6.5% and 78.6%.

Of the smokers with carcinoma of the lung, 74.7% smoked cigarettes, 8.8%, a pipe, and 16.5%, both. The comparable figures for the control group were 78, 4, and 18%. A significantly higher proportion (33%) of the smokers with cancer had smoked more than 20 cigarettes daily than had the smokers without cancer (18.1%). There was a slightly higher proportion of pipe-smokers among the smokers with cancer than among the smokers without cancer. An analysis of the duration of smoking showed some curiously anomalous results: there were more cancer patients who smoked than control patients who smoked in the 20 to 29 year age group (50.5% against 32.2%), but fewer smokers in the cancer group than in the control group under 20 years of age (8.8% against 13%) and in the group over 30 (40.7% against 54.8%). The cautious conclusion is reached that "it is possible that heavy smoking of cigarettes may be a factor in the aetiology of carcinoma of the lung."

PARIS

Cardiovascular Diseases in France.—According to the National Institute of Hygiene there is in France a steady increase of cancer and cardiovascular diseases. Between 1906 and 1949, the incidence of cardiovascular diseases increased 119% and that of cancer increased 123%. In 1906, deaths from cancer and tuberculosis were more than twice as numerous as those due to cardiovascular diseases. In 1949, mortality due to cancer and tuberculosis was only 84% of that due to cardiovascular diseases; thus cardiovascular diseases caused 17,000 more deaths than tuberculosis and cancer together. The general mortality rate fell from 156 to 130 per 10,000, between 1936 and 1947, and even to 125 per 10,000 in 1950. Among all causes of death, cardiovascular diseases have taken first place. In 1906, they represented 7.4% of the total mortality and occupied the fifth rank; in 1947, they reached 20.4% of the general mortality, almost three times the former figure. In France there is yet no detailed analysis showing the various forms of this disease in each age group. The distribution of deaths by *départements* is paradoxical. In 1946 the mortality was 6.6% in Paris and in other *départements* it was 7.4%. In 1947 the mortality in Paris was 18.3% and in other *départements* it was 20.4%. Thus the mortality in Paris is always a little less than that in the rest of France, notwithstanding the capital's accelerated tempo of life, which is one of the presumed causes of cardiovascular diseases. *Départements* most affected are those situated in the center, east, and south-east of France.

Use of Ganglion-Blocking Agents in Removal of Cerebral Tumors.—The use, in general surgery, of ganglion-blocking agents to reduce the loss of blood during operations has become common. Prof. D. Petit-Dutaillis and Drs. G. Guiot and Damoiseau employed this technique for the first time in brain surgery at the La Pitié Hospital. They used it in 70 patients, including 58 with brain tumors. They used hexamethonium bromide and more recently a new product, not yet employed in hypotensive surgery, "pendiomid" (n,n,n',n'-3-pentamethyl-n,n'-diethyl-3-aza-pentylene-1,5-diammonium dibromide). This substance is non-toxic; the blocking of ganglionic synapses was obtained with a thousandth of the lethal dose. This drug is easier to use, its action is easily reversible, and it is possible to use minute doses and to repeat them oftener. According to Petit-Dutaillis and co-workers, the problem is to produce an orthostatic hypotension, putting the operative area in a condition comparable to a transient exsanguination. The aim of these workers is to operate on the patients in a sitting position. For subjects with a cerebral disorder, this orthostatic hypotension must be progressively attained while watching brachial arterial blood pressure, pulse, and respiration. The first intravenous injection is performed very slow while the patient is in a dorsal decubitus position, with a dose of 20 mg. of hexamethonium bromide, or 50 mg. of "pendiomid"; then the body above the waist is progressively raised by several stages of 10° and the legs are progressively lowered while the hips are kept immobile. Blood pressure is maintained between 60 and 80 mm. Hg; if it falls lower, it is corrected by raising the lower extremities and lowering the upper part of the body. Ephedrine and epinephrine are rarely used. By the end of the intervention the same movements are repeated in the opposite direction. The tolerance of the brain to this orthostatic hypotension was checked by electroencephalogram and corticogram. The method is not used in aged patients or in those with a previous history of vascular defect. The only incident noted was a sudden hypotension with cyanosis and, once, with loss of control of micturition. These incidents were immediately corrected by putting the patient in a decubitus position or even by reversing the angle. This method suppresses capillary hemorrhage and diminishes cerebral peritumoral edema. Very fragile encephalic angiomas can be operated on without incident. Among 70 patients operated on, these workers note 9 operative deaths (15.4%), whereas before the introduction of this method the total mortality rate among 381 cerebral tumors operated on at the Pitié Hospital during the last two years was 26%.

Primary Tuberculosis in Young Children Due to Injections.—For some time, transmission of disease by the syringe, in the form of jaundice occurring during treatment of syphilis or other diseases, has been known. Professor Debré, M. Lamy, and their associates have noted 58 cases of primary infection with tuberculosis due to inoculation. In 24 cases they ascertained that penicillin was the vehicular agent. In one case tuberculosis was transmitted through an injection of streptomycin. After an incubation of two to three weeks, a cold abscess set in at the site of the injection, softened, fistulated, and formed a persistent cyst. Oftener than not the lesions remain localized and suppurative for a long time and result in scarring with calcification of the abscess or of lymph nodes. Distant lesions were noted in 13 patients: 5 with palpable mesenteric adenitis, 2 with transient pleural effusion, 2 with erythema nodosum, and 4 with splenomegaly. Microscopic examination of the pus of the abscess reveal 50 to 100 bacilli per field; the cutaneous reaction to tuberculin became positive in an average of four to six weeks after the count. The treatment consists of repeated evacuant punctures. According to Debré and his associates, prevention is most important. He demands that each patient have his own syringe but, if it is necessary to sterilize syringe and needle between each injection, a five minute boiling period is compulsory.

SPAIN

Congress of Orthopedics and Traumatology.—The Fourth National Congress of Orthopedics and Traumatology was held on Oct. 14 in the Assembly Hall of the Casa del Médico in Barcelona. Dr. R. Valdés Santuario of Oviedo and Dr. Sierra Cano of Santander dealt with antibiotics and chemical drugs used in treatment of osteoarticular tuberculosis. The speakers concluded that modern therapy contributes toward normal blood values and makes the sedimentation rate of the erythrocytes normal. The roentgen picture shows favorable changes in the atrophy of bone and in the capsulosynovial shadows, changes such as those observed in cases of cold abscess and of tuberculous fistula. The treatment also produces favorable changes on the allergic syndrome of the disease, including improvement of the lesions, which can be verified by histological observation of the involved tissues. The best results of treatment are observed in exudative-caseous synovitis and the most moderate results in chronic tertiary lesions. Dr. F. Garzía Díaz of Oviedo described his technique for ischiofemoral arthrodesis. A film was exhibited showing his technique, and another film showed experimental tuberculosis of the skeletal bones and its treatment. Dr. González Sánchez reviewed the history, classification, and various theories on the mechanism of production of the fractures of the pelvis. He stated that Bohler's method for separation of the symphysis pubis is useful. He described his own technique to be used when the aforementioned method fails. Bohler's technique is also of value in the treatment of fractures at the bottom of the acetabulum with great luxation of the head of the femur.

CORRESPONDENCE

COMPLICATIONS FOLLOWING INJECTION OF FISH LENS PROTEIN FOR CATARACT

To the Editor:—In an article published in *Science* Sept. 12, 1952, pages 276-278, Shropshire, Ginsberg, and Jacobi reported favorable results in the nonsurgical treatment of cataract with injections of fish lens protein. This treatment received widespread publicity in newspapers and other lay publications. It is, therefore, imperative to warn the medical profession of the possible dangers that may arise when persons who have received this treatment are subjected to surgical removal of cataract, since the repeated injections of fish lens protein may have rendered their eyes hypersensitive to their own lens protein.

I was alerted to the dangers inherent in lens protein treatment of cataract by the unfortunate experience of a patient in whom bilateral endophthalmitis developed following preliminary iridectomies in 1926. The endophthalmitis was accompanied by secondary glaucoma and resulted in total blindness. Several weeks before the operations, the patient had received 36 injections of the Davis lens antigen. This was an extract prepared from beef lenses.

Preliminary experiments on 13 patients were reported by Dr. A. E. Davis in 1922 (International Congress of Ophthalmology, Philadelphia, W. F. Fell, page 284). This was followed two years later by a report of a further series of 131 cases (Tr. Am. Ophth. Soc. **22**:112, 1924). Davis claimed that the progression of the cataract can be arrested if the treatment is given early, but he advised that "mature senile cataracts should be removed by operation." Several of his patients suffered severe systemic reactions, which, in some cases, necessitated termination of the treatment.

It is interesting to note that, at the same International Congress at which Davis presented his first paper, Verhoeff and Lemoine read their classical treatise on "endophthalmitis phacoanaphylactica." This term was, in fact, coined by Verhoeff to denote the severe inflammatory reaction occasionally encountered following rupture of the lens capsule either by trauma or during a lens extraction. This uveitis resembles sympathetic ophthalmia clinically, but can be differentiated from it on histological examination of the eyeball.

It has been established that this serious complication can be produced in experimental animals by sensitization to lens protein. This sensitization is tissue specific and not species specific, so that repeated injections of protein derived from fish or other animal lenses may sensitize the human eye to the protein of its own lens.

Recently, a private patient with bilateral immature cataracts received a series of 50 injections of the much-publicized fish lens extract. An intracutaneous sensitivity test performed in the course of this treatment produced a violent local reaction. Despite this, the injections were continued. The patient developed sensitivity to light in both eyes, and later a severe painful inflammation of his left eye ensued. This was caused by a sudden intumescence of the lens and was associated with evidence of uveitis, namely, keratic precipitates and an aqueous ray.

I removed the left lens in capsule. Nevertheless, the uveitis persisted for two weeks, after which time it subsided under the influence of cortisone therapy. Meanwhile, in the right lens subcapsular vesicles had developed, which probably were the cause of the photophobia, since some lens material could easily seep out of the lens into the aqueous through the extremely thin lens capsule. The right lens was therefore removed in capsule, whereupon the photophobia subsided and the eye recovered uneventfully.

To my knowledge, approximately 1,000 persons, all having cataracts that eventually may require surgical treatment, have already been subjected to lens protein injections that have rendered them sensitive to their own lens matter. It is important for the physician to realize the serious potentialities that sensitization to lens protein may involve and to inquire specifically regarding any former treatment. Most patients will be reluctant to disclose their unsuccessful attempts at medical treatment, both in an effort to avert criticisms and in order to spare the sensibility of their physician. The patient must be made to realize that failure to reveal such information may have a serious effect on the course of his treatment and may even lead to loss of sight.

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BOXING IN NEW YORK

To the Editor:—I want to take this opportunity to thank you for the kind reference to the Medical Department of the New York State Athletic Commission in your editorial entitled "Medical Examinations for Athletes," appearing in THE JOURNAL for Dec. 13, page 1490. We were particularly gratified with the favorable reference to the accomplishments of the medical department of the New York State Athletic Commission, and therefore I think it is appropriate at this time to submit to you a brief but more comprehensive interim report that was submitted to me recently by our medical director, Dr. Ira A. McCown. Dr. McCown is a fellow of the American College of Surgeons, diplomate of the American Board of Surgery, and has for years been particularly interested in traumatic surgery, specifically head injuries. This report is submitted with the realization that all medical information and scientific data should be made available to all those interested in the welfare of boxers, their health and medical safeguards, since it is apparent from your editorial that many states are woefully lacking in this regard.

A concrete example of our desire to further the medical phase of the boxing program and to make this information available to other states is that the first medical conference of Athletic Commission Physicians was held at the Hotel Astor, New York, July 25 and 26, 1952, at which time medical authorities in their respective fields engaged in a symposium on safeguards for boxers and injuries and accidents sustained by boxers. The participants in this symposium included such well-known authorities and specialists as Dr. Jefferson Browder, professor of surgery, and neurosurgeon, New York State Medical School, who spoke on the diagnosis and treatment of head injuries; Dr. Charles G. Child III, attending surgeon, New York Hospital, and associate professor of clinical surgery at Cornell University, on the pathological physiology of anoxia and the indications for a resuscitator in the treatment of shock at ringside; Dr. John L. Madden, assistant professor of clinical surgery at Long Island College of Medicine and director of the department of surgery at St. Clare's Hospital, on the requisition of a fully equipped emergency medical kit for ringside physicians; Dr. Abraham Rabiner, neurologist and clinical professor, New York College of Medicine, on a practical medical research program for boxers; Dr. George Righter, otolaryngologist at the Albany Hospital and assistant professor of Otolaryngology at the Albany Medical College, on the nasal, paranasal sinus, and ear complications in traumatic and infectious injuries in boxers; and Dr. Vincent Nardiello, commission physician at Madison Square Garden and well-known boxing physician, who spoke on 25 years' experience in treatment of ringside emergencies.

The doctors from the other states that were represented at the conference came from as far south as Florida and from as far north as Maine. The panel of physicians in New York State, consisting of about 35 members, were also present, and the representatives of some of the other state boxing commissions attended this conference and participated in the discussions, the end result of which was a compilation of a 235-page report, which will soon be available to the various Athletic Commissions throughout the country. This indeed may well serve as a Medical Bible of authoritative reference for boxing.

The following recommendations have been considered and approved by the commission during my tenure as chairman:

1. A new type of absorptive mat for the ring, replacing the old felt pad. This was developed after considerable research by the Cornell Aeronautical Laboratories, Buffalo, N. Y., and is now mandatory in every boxing arena in the state of New York. We consider this, more than any one safety measure, responsible for the total absence of fatalities in the past 14 months, and only insignificant and minor injuries from knock-downs. Even to the layman at ringside, hearing the terrible "thud" that the occiput made at the impact with the old felt pad and the resulting inaudible impact that is made with the new type of ring mat, the improvement is all the more apparent.

2. Recommendation of the substitution of 8 ounce gloves for the conventional 4 and 6 ounce gloves in all rings in New York State, except for championship bouts. This too was approved after extensive research by the same Cornell laboratory, which experimented with gloves of various weights and conclusively proved this newly recommended glove to be the safest.

3. The mandatory 8 count knock-down rule, effective Dec. 7, 1952, for all except championship bouts, and the three successive knock-down counts in any one round terminating the bout for all except championship bouts.

4. Thirty day automatic suspension rule, operative for all knockouts and other indicated injuries.

5. Mandatory electroencephalogram required as part of the physical examination on all boxers and after each knockout and on indication after any injury. We consider this, more than any one safety measure, responsible for the reduction of serious complications in head injuries, and we have a full-time technician and the electroencephalographic equipment available in the medical office of the commission for this procedure. We also have an outstanding neurosurgeon, Dr. Harry Kaplan, who interprets and evaluates our electroencephalograms; in addition, he is often seen at ringside taking motion pictures to correlate these with the electroencephalogram.

6. A resuscitator, complete with oxygen equipment, now mandatory and available at all ringsides for every boxing bout.

7. Adoption of a standard emergency medical kit with a complete complement of first aid dressings, bandages, and instruments for use by our commission physicians in emergency at ringside.

8. Automatic suspension of any boxer who loses six consecutive bouts or who sustains four consecutive knockouts. A critical review of his medical and boxing record must be made before reinstatement.

9. A complete intergration between the medical department and the deputy commissioners of the boxing record and physical and mental status of all boxers before bouts will be approved.

10. Two ringside physicians available for all boxing bouts in New York State.

11. The trial use of calcium carbonate as a substitute for resin at ringside. Further evaluation of this will have to be made before it can be pronounced superior to resin.

12. Urine examinations before and after bouts to determine if there is any microscopic change probably denoting any kidney trauma.

13. Taking of temperature before and after bouts to determine any metabolic alterations.

14. Mandatory semiannual examinations for the referees and annual examinations for the judges by the official state commission physician.

Obviously the primary effectiveness of any medical program, whether in boxing, industry, or other competitive sports, is reflected by the personnel, facilities, and equipment available for these examinations. We have a panel of 35 commission-approved physicians available in New York State for the examination of boxers. Each boxer obtains at least three complete physical examinations, including examination of chest, skull x-ray, electroencephalogram, and urine examination and any other indicated examination.

Each boxer obtains at least four complete physical examinations during his tenure in any boxing bout. First is the annual physical examination; second, the five day pre-bout examination; third, the noon weigh-in examination; fourth, the physical evaluation immediately prior to the bout; and, fifth, if and when indicated, a post-bout physical examination to determine the extent and nature of any injury suffered in any ring.

The New York State Athletic Commission's concern for the safety and welfare of the boxers is further exemplified by the fact that one of the members of the commission, Dr. Clilan B. Powell, is a physician roentgenologist. It is particularly gratifying that we have in New York a most progressive and forward looking governor and legislature, who not only encourage but actively support and make possible the above-mentioned medical advances in boxing. This has been manifest through enacting appropriate legislation and appropriation of sufficient funds to equip the modern commission medical department. When we have medical problems on which the commission requires advice and counsel, Dr. McCown, the medical director, presents such to the medical advisory board for their reaction. The medical advisory board consists of Dr. Marvin Stevens, chairman, and authority on athletic injuries; Dr. John A. McClean, ophthalmologist to New York Hospital and Cornell University; Dr. Jefferson Browder, Gardner Childs III; Dr. John S. Madden; Dr. Max Moses, prominent industrial physician; Dr. Abraham Rabiner; and Dr. Charles Muzzicato, radiologist to the Goldwater Hospital.

The physical welfare of the boxer is a matter of paramount importance to the commission, and I assure you that we welcome at all times any recommendations or suggestions of a scientific nature relative thereto.

ROBERT K. CHRISTENBERRY
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HEALTH INSURANCE PLAN OF GREATER NEW YORK

To the Editor:—In the Dec. 6, 1952, issue of THE JOURNAL, page 1422, appeared a letter signed by Dr. George Baehr, as president and medical director of the Health Insurance Plan of Greater New York. This letter, as stated by Dr. Baehr, is his answer to the article written by Dr. Arthur M. Master and published in the Oct. 25, 1952, issue of THE JOURNAL. Because Dr. Baehr's letter is argumentative, it is but natural that a reply is expected. I wish to be counted as one who is opposed to the plan known as the HIP plan or the Health Insurance Plan of Greater New York. Dr. Baehr's letter explains all the reasons why the HIP plan is undesirable. Let me quote from his letter.

From paragraph 2: ". . . the professional skill and integrity of 950 of his colleagues in this city, 46% of whom have been qualified by the American Specialty Boards." All recent figures, and I refer to the studies made by Dr. Vincent of the Rockefeller Institute for Medical Research, state that at least 80% of all ills can be treated by properly trained general practitioners. Note the disparity. The HIP plan offers 46% specialists.

In the last paragraph of Dr. Baehr's letter, he mentions ". . . influence for a time in restraining those who were endeavoring to retard the evolutionary changes in medical practice that are the result of the times in which we live." Do these evolutionary changes imply that the medical schools are sending out at least 26% more general practitioners than the public require? Has Dr. Baehr requested the medical colleges to change their curriculums so as to produce 46% qualified specialists and 54% general practitioners?

In paragraph 4, he states that the termination rate last year for all causes, including change of employment and removal from city, was only 7.8%. Does Dr. Baehr infer that the various groups, unions, and employers using the HIP plan have a labor turnover of 7.8%? Is it not a matter of fact that most of the plans are subscribed to by unions and employers where the change of employment rate is less than 7.8%?

In paragraph 3, in regard to the intimate doctor-patient relationship, Dr. Baehr states, in speaking of the family physician, that "his work may be unhurried, his panel of families is limited by the Medical Control Board and by his group director. He is relieved of all obstetric work and also of the routine care of children up to school age." How does one ever develop a practice to be known as a general practice if one does not do obstetric work or take care of children up to school age? This statement is so dangerous that, if carried to an extreme, even the 54% of general practitioners that the HIP plan now uses will be reduced. How soon will it be when Dr. Vincent's ratio will be reversed, namely, 80% of all medical and surgical cases to be treated by specialists and 20% by general practitioners. Is this the evolutionary change that we are to expect? Does the A. M. A. approve of this?

Dr. Baehr's letter states, "HIP, like Blue Cross and Blue Shield, is a voluntary insurance plan. . . ." What is the meaning of that little one-syllable word "a" in the phrase "a voluntary insurance plan"? Does it mean, as he implies, that the free choice means not a free choice of a physician but the free choice of a prepaid group practice?

Once again, is this the evolutionary change in medical practice by which large insurance companies offer competition to private practitioners by offering groups as bait? Secondly, is this not truly socialistic when a group practices medicine wherein the basis for eligibility to such group means approval by a self-anointed governing board called a medical control board of 15? Is this not centralization of the highest degree? Perhaps the word socialism needs a newer definition. It is my opinion that anything that gives a group of 15 such a powerful hold over policies is in itself the most dangerous weapon and should be exposed and condemned.

The HIP plan does not stand out of itself and is not sold by itself; it always seems to go with a fringe package. It is tied up with a Blue Cross hospital plan, a death insurance policy, a vacation policy, a pension plan, etc. I believe that it should be a form of voluntary insurance that even on a nonprofit basis should be self-supporting, and the patient should have a free choice of his own physician, with his own physician being paid according to a schedule fee list and with the policy made as comprehensive as humanly possible.

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To the Editor:—A moderate, but otherwise brilliant article concerning the impact of a certain "voluntary" health insurance plan on the private practice of medicine, written by one of America's outstanding cardiologists and recently published in THE JOURNAL (Oct. 25, 1952, page 766) called the attention of a wide circle of medical practitioners to the ever-growing menace of socialization of medicine in this country. In fact, an "answer" to Dr. Master's paper, alleged to be a refutation of the latter's assertions, was so evasive and misleading that the following facts should be brought out for the sake of fairness. To call a plan voluntary just because its subscribers have the right to call on one of two or three practitioners belonging to a certain group is to say the least a joke, reminiscent of the "free and fair" elections in certain countries, where the "people" have the "right" to elect one of the two or three government-sponsored candidates for office, or else. The main issue in socialized versus individual medicine is not the fact that the state or some other collective superbody runs the insurance plan but the fact that a colossus, be it the state, the federal government, or the county, or for that matter a superconglomerate of unions, can compel (by economic pressure) hundreds of thousands of persons to belong to an insurance plan subsidized by all the taxpayers of a certain locality. The fact that the "ideologists" of that plan resent the name "socialized medicine" as applied to their modus operandi and that they proclaim its "free" character means nothing; indeed, nowadays we are used even to totalitarian regimes claiming to be the paradigm of "real" democracy. Incidentally, while touring fascistic Spain a few months ago, I was surprised to find a very similar insurance plan! Truly, *"les extrêmes se touchent!"*

The harmonious physician-patient relations in that idyllic insurance plan is only a myth, nay, a nightmarish myth. Indeed, those unfortunate practitioners who belong to that panel often complain that they are utterly abused by their "customers" who call them for no good reason, just because "they don't have to pay"; hence, one of my friends had to make in one day 30 home calls, because it was raining and his habitual hypochondriacs did not feel like coming over to his office! How then can a physician consider such patients as his patients and not as his slave-drivers (textual expression of one of my friends who works for that plan) is beyond my comprehension. Obviously, for many a practitioner unable or unwilling or unqualified to struggle in our competitive society the "plan" is a blessing: it assures him a minimal subsistence, at the price of his pride, dignity, and convictions. O tempora, o mores!

The easy access to "qualified specialists" creates among the subscribers the false impression that the general practitioner is only a species of first aid station; hence the idolization of specialists and the denigrating attitude toward the general practitioner. In fact, a friend of mine, an elderly physician working for that insurance plan, was called some time ago to see a young child; he told the parents that the child had pneumonia; the father looked at the mother and told her wryly: "He says that the child has pneumonia; I believe we have to call in a doctor." These are the fruits of socialized medicine, and no physician cherishing freedom and individual liberty and dignity could afford to overlook the dangers that threaten our profession.

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BOOKS FOR KOREAN MEDICAL SCHOOL

To the Editor:—One of the most urgent problems involved in the rehabilitation of Korea and its people is the reactivation and rehabilitation of medical education, which has been virtually dormant under the war conditions prevailing in the nation the past two years. This headquarters has taken considerable interest in the whole problem of public health and medical education in Korea and in the reactivation and rehabilitation of the medical and nursing schools.

In this connection, we have offered to the schools all the facilities we can spare, the services of our professional officers for teaching on the faculties of the schools and in the hospitals, assistance in obtaining textbooks and other instructional aids, and advice and encouragement in rehabilitating their staffs, curriculums, and physical plants. The Koreans have responded and accepted in a gratifying manner; they are badly in need of our help and appreciate anything we do for them.

In attempting to place the schools in operation again, it is clear that the most critical need is for textbooks (old editions are welcome), reference books, journals, reprints, posters, pamphlets, or any other teaching aids of like nature. Most of the students know some English and are rapidly improving their skill in both reading and speaking the language. If anyone can furnish us with any material of this kind, it will certainly be utilized.

Recently in THE JOURNAL (150:52 [Sept. 6]), there was an appeal by Col. L. Holmes Ginn Jr. for books for the medical school in the city of Seoul. The books for which I am now asking are intended for the Taegu Medical School, which, in contradistinction to the Seoul Medical School, is entirely dependent on the Korean Project. The school at Seoul is sponsored by the Severance Hospital, which is supported by the Presbyterian Church, mainly from the United States. Therefore, the Taegu Medical School has no sponsors other than those of us who are trying to establish medicine in Korea, a project that is badly needed. It might interest you to know that I have attempted to amalgamate several other schools into the Taegu Medical School, and this is progressing rapidly. There is, however, a dearth of material, and anything you can do will be greatly appreciated.

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COUNCIL ON MEDICAL SERVICE

This is the eighth in a series of studies made by the Committee on Indigent Care of the Council on Medical Service concerning local plans for medical care of the indigent. A general introduction to the series appeared in the May 10, 1952, issue of THE JOURNAL, *pages 188-191. The seventh study (Cascade County, Montana) appeared in the Jan. 10, 1953, issue, pages 146-148.*

MEDICAL CARE OF THE INDIGENT IN POLK COUNTY, IOWA

This study considers the medical care available for indigent and medically indigent residents in Polk County, Iowa. The county has approximately 226,000 residents, of whom 178,000, or 79%, live in Des Moines, the state capital. It is both an agricultural and an industrial area, with the growing importance of industry indicated by a 30% population increase in the last 10 years.

ELIGIBLE POPULATION

In 1951, approximately 5,732 residents of Polk County, or 2.5% of the county's population, were eligible for aid under general and public assistance programs. The number eligible for aid from each program are shown in table 1.

TABLE 1.—*Persons Eligible for Aid Under General and Public Assistance Programs*

		Number Eligible
General Assistance		288
Public Assistance		5,444
Old Age Assistance	4,565	
Aid to Dependent Children	690	(families)
Aid to the Blind	189	

The total number of individuals eligible for aid to dependent children was not available, and, at the time the survey was made, Polk County had no aid to the permanently and totally disabled program.

General assistance clients must be legal residents of the county. Reciprocal agreements have been made with other counties, however, to provide aid for nonresidents who cannot safely be moved to their home counties for treatment. The public assistance programs do not require legal residence in the county for medical care.

ADMINISTRATION

Both general and public assistance medical care are administered on a county-wide basis. Home care and hospitalization, however, are administered by two different agencies. The Polk County Welfare Department, which is in charge of all assistance programs, certifies the client's eligibility for welfare aid on an individual casework basis. Those certified are automatically eligible for physician's care in the home or office, which is provided through the welfare department. Every patient who uses the Broadlawns Polk County Hospital or its clinics as a public assistance patient must be certified as eligible by the hospital, even if he has already been certified for welfare aid by the welfare department.

The outpatient department of the hospital is responsible for its social service and records. Medical social service workers interview the patients, determine their eligibility for free care, and arrange the transfer to private hospitals of patients who are ineligible. The department also makes arrangements for nursing home care or such follow-up treatment for discharged patients as the physician advises. Nonresident and transient patients are also interviewed by this department and directed to the proper agencies from which to obtain aid.

The hospital is governed by the Broadlawns Board of Hospital Trustees, an elective body that serves without compensation. The board determines the appropriations needed to maintain hospital services and is responsible for the administration of welfare hospitalization and clinic care. Medical counsel for the board is provided by an advisory committee of the Polk County Medical Society, composed of nonstaff physicians, and by the executive committee of the attending medical staff. This executive committee, composed of the chiefs of the various departments, makes all professional and medical decisions concerning hospital policy, subject to board approval.

Some informal coordination of home care and hospitalization programs is provided by the Council of Social Agencies, through its Social Service Exchange, to which authorizing agencies report all assistance clients. In this way, each welfare agency can determine the total aid given any individual.

The Polk County Medical Society takes an active part in the welfare program. The society's consultant committee meets once a month to review bills for physicians' services to welfare patients. The committee determines whether charges conform to the established fee schedule and whether the services rendered are in accordance with program regulations. The county welfare director and the committee act together to control abuses of assistance programs by physicians and by the public. The society also makes every effort to assist those patients who are not eligible for care at Broadlawns Hospital.

Dissatisfied patients may appeal to the state administrative boards, and old age assistance clients may, in addition, appeal to the courts. The medical society's grievance committee reviews complaints against participating physicians or, if necessary, can refer complaints to the grievance committee of the Iowa State Medical Society.

SERVICES AVAILABLE

Approximately the same benefits are available for clients of the general assistance, aid to the blind, and aid to dependent children programs. Home and office calls by physicians are provided on a free choice basis. Aid to the blind and aid to dependent children clients may also receive physician's treatment in private hospitals on a free choice basis, but patients treated at the county hospital, the usual agency for hospitalization and clinical care of welfare patients, have no choice of physician.

Those private physicians who are willing to accept welfare cases are listed with the medical society and with the welfare department and may be contacted in an emergency through a 24 hour telephone answering service maintained by the society. Emergency treatment will be allowed without prior authorization, but under ordinary circumstances the welfare client is required to obtain authorization before receiving medical care.

Old age assistance differs from the other programs in that each client is given a monthly grant, based on an estimate of his medical costs for the year, and is expected to pay for whatever medical care he receives from this grant. If the grant is insufficient, he may request additional allotments.

Most welfare patients are hospitalized at Broadlawns County Hospital, although some clients are treated at the university hospitals in Iowa City. The patients referred to the university hospitals are usually sent there with teaching values in mind, although eligible patients may be referred there at their own request. Specialist care is provided at Broadlawns outpatient department, which is a fully equipped and fully staffed clinic.

The county hospital provides diagnosis of mental ailments but is unable to handle all admissions for mental treatment, since it has only one seclusion room. Many patients are cared for in private rooms, and some with milder disease are placed in wards. The demand on clinical and hospital facilities for mental patients has so increased that sometimes the jail must be used for patients who cannot be cared for at home. Part of the hospital's medical section is being remodeled to provide more facilities for studying mental patients; however, remedial treatment must be either at private or state mental hospitals.

The assistance program will provide home nursing in Des Moines and a limited amount of nursing care elsewhere in the county. Prescriptions are filled by the pharmacy chosen by the patient or, for hospital and clinic patients, by the hospital pharmacy.

The programs provide for convalescent care when necessary, although most local physicians do not consider the nursing homes in the county satisfactory. The county maintains its own farm or home for miscellaneous indigent persons, including transients.

The welfare department will provide all benefits advised by the physician, including appliances, for clients of any program. Surgical care for aid to the blind and aid to dependent children clients, however, is provided through general assistance funds.

In addition, Polk County has a program providing free care for tuberculosis victims, which makes use of the tuberculosis department of Broadlawns County Hospital. However, the interpretation of the 1947 law authorizing this care varies, so that even the agencies involved have had difficulty determining the benefits due the patient.

SPECIAL PROGRAMS

The Community Chest operates a convalescent home that provides beds for about 20 children and a health center that provides preventive medical care and dental care for children and adults. This clinic refers patients requiring hospitalization to the proper agencies, provides eyeglasses for children, and examines juvenile court patients for the county. The Public Health Nursing Association holds well-baby conferences, including immunization procedures, throughout the county. Some indigent patients are treated at the Veterans' Administration hospital or outpatient clinic in Des Moines or participate in the Home Town Medical Care Program.

Iowa also has a Soldiers' Relief Commission in each county, which provides assistance to all veterans and their families. In Polk County, the commission purchases hospital care from the county hospital at cost and medical care is provided by the attending staff for a token payment, which is assigned to the Polk County Medical Society. The Iowa State Rehabilitation Division pays for remedial care for many residents eligible for welfare assistance.

In addition, the Council of Social Agencies sponsors, through its health council, a study of care of the chronically ill. Since many of the chronically ill, particularly the aged, are clients of the assistance programs, representatives of the welfare department and of the various medical care organizations are cooperating with the council in this study. These privately and publicly sponsored programs are not confined to indigent citizens, but in many cases they do supplement the care provided by the general and public assistance programs.

PROVIDERS OF SERVICE

Treatment in home, office, or private hospital can be provided by any physician willing to participate in the program. About half the 230 active members of the Polk County Medical Society have agreed to treat welfare patients.

The society's emergency telephone service is operated by the district nurses' association at the society's expense. The operators at this Physicians Service Bureau are provided with a list of all physicians willing to accept welfare patients and will contact one of these physicians in an emergency.

The Broadlawns County Hospital, supported by county tax funds, is the main agency for hospitalization in welfare cases. The medical attending staff is composed of members of the Polk County Medical Society, who volunteer their services free of charge. The society's advisory committee determines whether the physician is qualified for appointment to the branch of service for which he has applied. The hospital's executive committee then passes on the application and refers it to the board of trustees for final approval.

Physicians are assigned to certain periods of the year, during which they cover the service to which they are assigned. In 1951, approximately 150 physicians were on the staff as active, honorary, or consultant members. These physicians care for patients and also instruct and supervise the residents and interns. Broadlawns County Hospital has an arrangement whereby residents in various specialties at private hospitals in the county and at the University of Iowa hospitals are appointed to service at Broadlawns for periods of four to six months.

The university hospitals accept about 600 patients per year from Polk County, according to a quota based on state taxation and county population. The private hospitals in the county also accept some welfare patients but are reimbursed for this care by rehabilitation and charitable organizations rather than from general or public assistance funds.

According to the latest figures, there are 1,244 hospital beds in Polk County, including 165 in three osteopathic hospitals and 50 in a private hospital for mental patients. Broadlawns County Hospital has 166 general hospital beds and 90 beds for tuberculosis patients.

The outpatient department of the county hospital provides clinical and specialist care for indigent patients. There are 30 clinics each week in the various specialties. Usually the clinics are conducted by attending staff members, but some are conducted by residents. The outpatient department at present has a policy of referring aid to the blind and aid to the dependent children clients to their private physicians for treatment, if their condition allows this.

The hospital also maintains a blood bank, which is almost self-supporting. In 1950, only 264 of the 1,161 donors were professional. The remaining 897 or 77% were relatives and friends of patients who received transfusions.

Home nursing in Des Moines is provided by the Public Health Nursing Association. The association is supported mainly by private funds, although some tax funds are used to supplement the staff. Limited nursing care is provided in the rest of the county from county funds, supplemented by federal funds allocated by the state department of health.

Prescriptions are filled at private pharmacies. Patients receiving regular treatments at the hospital may have prescriptions filled at the Broadlawns pharmacy.

PAYMENT FOR SERVICES

The old age assistance program pays for medical care on a "preallotment" plan. The physician estimates the amount of medical service his patient will require during the coming year, and a grant sufficient to pay for this service is sent to the patient in monthly installments. From this grant, the client is expected to pay for whatever medical care he receives. If the allotment proves inadequate, he can apply for an additional amount, but if it is in excess of his needs, no adjustment is made during the year.

For clients of the other assistance programs, physicians' care is reimbursed according to a fee schedule established by the Polk County Medical Society and the state and county welfare departments. The schedule lists maximum fees for house and office calls, laboratory services, immunizations, x-ray examinations, and some special procedures. The Blue Shield fee schedule is suggested for services not covered.

A fee of $5.00 is allowed for each house call, whether day or night, and $1.00 for each additional patient treated on the same call. The fee for an office visit is $2.50, and $3.00 is allowed for subsequent visits to receive injections.

Physicians' fees will be paid for treatment of aid to the blind and aid to dependent children clients at private hospitals, but no provision is made for the payment of hospital charges. Attending physicians at Broadlawns County Hospital serve without payment. Patients receiving inhospital care at the county hospital who are able to pay for service make their payments to the Polk County Medical Society.

Broadlawns County Hospital and its outpatient department, which provide most of the hospitalization and clinical care for welfare clients, receive no payments from general or public assistance funds. If the patient is able to make any payment for outpatient clinic care, the fee is retained by the hospital.

A physician who treats a general assistance, aid to the blind, or aid to dependent children client submits his bill to the con-

sultant committee of the medical society for auditing. The society then sends general assistance bills to the county welfare department and public assistance bills to the state department of welfare for payment. General assistance claims are paid directly to the physician. Although federal laws now allow payment directly to the physician for public assistance care, Polk County pays by a special allotment to the client, who is then expected to pay the physician himself. Payments for other medical services or for appliances are made directly to the vendor.

COST AND FINANCIAL SUPPORT

The general assistance program in Polk County is supported by county taxation. An annual appropriation is made to the county welfare department for this program, and an emergency appropriation can be made if the funds allocated prove insufficient.

Aid to the blind and aid to dependent children programs are supported by county, state, and federal funds. The federal government contributes half the cost of the program, and the state and county each provide one-quarter. Funds allocated in 1950 were adequate in both programs, though physicians reported that less than half their fees were paid.

The old age assistance program is supported by the state and federal governments, which share the cost equally. The funds allocated in 1950 were inadequate, but the state budget cannot be augmented by emergency appropriations. As a result, grants were curtailed and many physicians suffered a loss. However, the physicians, the health center, and the Broadlawns outpatient department continued to give medical care to the aged after the funds were exhausted.

The county hospital receives an annual appropriation from the county, based on a detailed budget covering anticipated expenditures for the ensuing calendar year. This budget is prepared prior to Aug. 15, which is the final filing date for tax levy askings, and the appropriation is established on the basis of these figures and the anticipated revenue. In 1950, the state legislature granted an increase in the tax for hospital support to two mills and authorized a further one mill emergency tax if the regular tax did not provide sufficient funds. The hospital board has authorized the presentation of a bill for an increase in the tax rate to five mills, since emergency appropriations have been necessary annually during recent years.

TABLE 2.—*Total Cost of Patient Care and Approximate Cost of Free Care Provided in Broadlawns County Hospital in 1950*

	Total Patient Care Cost	Free Patient Care Cost (Approximate)
Tuberculosis Department	$ 69,857.20	$ 54,483.62
General Department		
Outpatient	70,395.97	35,179.99
Hospital	409,938.11	270,559.15
Total	$550,191.28	$360,227.76

TABLE 3.—*Attendance Figures and Expenditures for Some Items of Hospital and Outpatient Care in 1950*

	Tuberculosis Department		General	
	Outpatient	Hospital	Outpatient	Hospital
Individual Patients	343	145	9,081	4,855
Patient Days per Visits	3,813	29,895	37,520	47,994
Cost per Day per Visit				
Gross Cost	$ 6.41	$ 2.94	$	12.79
Patient Care	2.34	1.88		10.34
Medical Salaries	9,265.00	12,551.64		43,259.68
Nursing Salaries	45,775.33	16,295.49		205,519.58
Drugs and Medicines	6,726.13	17,833.51		71,333.97

Some patients at the hospital and the outpatient clinics are found able to pay all or a part of the hospital charges. In 1950, 69.7% of the hospital funds came from the county and 30.3% from these patients or from agencies liable for their care.

Figures are available only for the expenditures and services provided at Broadlawns County Hospital and its tuberculosis department; no data is available on other assistance costs or services. The expenditures and services for general and public assistance patients at the hospital are not listed separately. However, approximately 78% of the patients in the tuberculosis department received free care in 1950, and about 66% of the patient-days in the general department of the hospital were not covered by full or partial payments. A report of the investigations and check-ups of patients treated at the general outpatient clinic shows about 50% of the clients investigated were covered by one or more of the assistance programs.

Applying these percentages to the statements of the total cost of patient care in the three departments, the approximate cost of the free care provided in the various departments of the hospital in 1950 is shown in table 2.

The total net operating expenses of the hospital in 1950, for both departments, was $914,894.67 and the total operating income, of which 98% was received from patients or from agencies paying for their care, was $267,974.95. The hospital pharmacy filled 31,001 prescriptions during the year, but data are not available as to the proportion of these that were filled for welfare patients. Attendance figures and expenditures for some items of hospital and outpatient care in 1950 are shown in table 3.

MEDICAL SOCIETY RELATIONSHIP

The Polk County Medical Society not only cooperates with the county's assistance programs but also, to a certain extent, sponsors and helps administer them. The fee schedule for physicians was established through the cooperation of the society and the welfare agencies, and the society's consultant committee audits physicians' bills for all programs except old age assistance. The committee also works with the welfare department to prevent abuses of the program. The society's grievance committee stands ready to hear complaints against physicians participating in the program.

Medical care for patients hospitalized at the county hospital is furnished under the auspices and direction of the Polk County Medical Society. Society members serve at the hospital without payment, caring for patients and supervising and instructing the interns and residents. The advisory committee of the society reviews all applications for staff membership at the hospital and determines the applicant's qualifications. All decisions concerning professional care and medical policies in the hospital are made by the attending staff's executive committee, composed of society members, with the cooperation of the advisory committee. Hospital patients who can afford partial or full payment remit this payment to the medical society.

During the war, when medical service was at a premium, the Polk County Medical Society agreed to pay the salary of a clinical director. The society decided that employment of a physician in this capacity would help to offset the shortage of staff members caused by military demands. In 1950, the council of the society decided that this shortage no longer was critical and discontinued its contribution of the clinical director's salary. However, as the society felt that the position should be continued at the hospital regardless of the size of the attending staff, the board of hospital trustees has assumed payment of the director's salary.

In addition to its services to the county hospital, the society has established a commitment board that supervises treatment of patients referred to the university hospitals. The board receives reports on the patients while they are at the hospital and utilizes local medical and auxiliary facilities to follow up the cases and provide interim and post-treatment care.

The medical society's working agreement for medical care for county patients also includes treatment of patients at the county

jail and the juvenile home. In addition, the society office makes every effort to assist patients who are ineligible for care at the county hospital.

SUMMARY

Medical care for indigent and medically indigent residents of Polk County is on a county-wide basis. Clients of the assistance programs are all eligible for the same benefits and will be provided with any care considered necessary by the attending physician.

Physicians' care, prescriptions, appliances, home nursing, and convalescent care are provided by the county welfare department. The patient has free choice of physician for home and office care and in private hospitals, and physicians are reimbursed according to a fairly liberal fee schedule.

Physicians providing aid to general assistance clients are paid directly by the county. Public assistance patients receive an addition to their regular monthly grant with which they are expected to pay for physicians' care.

No provision is made for the payment of hospital or clinic charges, since the program makes use of Broadlawns County Hospital and the University of Iowa hospitals, which are tax-supported. Physicians at the county hospital, who provide in-hospital, clinic, and specialist care for welfare patients, serve without remuneration under the auspices and sponsorship of the Polk County Medical Society. The patient does not have free choice of physician in the county hospital, and the hospital determines his eligibility for free care without reference to the welfare department's decision on his case. Prescriptions are filled by private pharmacies and by the hospital pharmacy. Though convalescent care is available, the county has no control over the quality of nursing homes. There is general dissatisfaction with this situation, and several agencies are attempting to obtain some regulation of the homes.

Several public and private specialized programs providing medical aid include assistance clients among those aided. Regulations have been established to provide care for nonresidents and transients.

Placing physicians' care under one agency and hospitalization under another leads to a certain amount of confusion. For instance, a relief client must be certified as eligible by both agencies to receive both types of care. Cooperation exists between the two authorities, but there is no formal liaison or coordination. A central certifying authority for all medical care might avoid much duplication of effort.

There is no control over the spending of the medical allotment to public assistance clients, and physicians and other providers of medical services report that less than half their fees are actually paid. This has resulted in a natural reluctance on the physician's part to treat public assistance patients.

The method of payment for old age assistance care is a particular subject of dissatisfaction. Since the medical grant is based on an estimate of medical needs for the coming year, the amount granted each client frequently differs from his actual medical costs. As a result, the patient may have to request additional funds or receive free treatment, or he may realize a profit on the medical care grant. In either event, the program seems inequitable and unsatisfactory.

This dissatisfaction with the old age assistance program is particularly noteworthy since the program includes about 80% of those eligible for welfare aid in the county. The aged are also those most likely to require medical assistance. The county hospital, for example, reports that about half its bed patients are 60 years of age or over.

However, despite these complaints concerning administration of the program, it seems generally agreed that the medical care provided is adequate except for convalescent home care. In addition, public and private programs provide help for nonresidents and "borderline" cases; no person is denied necessary hospital and medical care.

The assistance programs operate with the full cooperation and aid of the Polk County Medical Society, and control of medical care and standards remains in the hands of the medical profession.

MISCELLANY

LIMITATIONS OF CONSUMER FOOD PROTECTION UNDER EXISTING LAWS

We have been hearing about the adequacy of the nation's food supply and of the American diet in terms of nutritional health, about nutrition as a factor in disease and the significance of recent advances in nutrition. These subjects place an accent on the positive. I wonder if we should not look also at some of the negative aspects. It is these that tend to negate the values of the great scientific advances in nutrition.

The diet of the American people has undergone great changes —I am sure for the better. American agriculture has produced ever-increasing quantities of the so-called protective foods. The food processing industries and the pharmaceutical industry have developed processes and products of great value. New canning and freezing techniques preserve the nutritional values of food crops. Chemical synthesis has made vitamins plentiful and inexpensive. Millions of citizens have been educated on the importance and content of a balanced diet.

Unfortunately the American public is not sufficiently informed to gain full advantage of the achievements of science and technology in the fields of nutrition and of agriculture, food processing and marketing. Because public education in these fields has lagged in some areas there has been a penalty for our progress in nutrition. This lack of public knowledge has made a fertile field for new forms of quackery which frequently impair the consumer's health by inducing him to rely on bizarre diets or nutritional nostrums for treatment of serious diseases.

Myths and folklore in regard to foods and diet are as old as mankind, but a vast new folklore of nutrition is being built by distorting the facts of the real advances of nutrition science. Speculative theories reported to scientific groups are stated to the public as facts; facts are half stated and become half truths in this campaign of misinformation which constantly seeks to persuade uninformed consumers to become faddists of one sort or another. In all our scientific writings we should try to choose expressions of such accuracy and clarity that they will not lend themselves to easy distortion for the promotion of nostrums.

The food quack has something to sell. If it is shipped across state lines and if the labeling includes false or misleading statements, we can institute legal action. But if the quackery is confined to false teachings in books, pamphlets, or "health magazines" or radio and TV broadcasts that are not part of a commercial scheme of distribution and do not come under the legal definition of labeling, then the FDA can take no legal action.

Where the false or misleading matter does not fall into the category of commodity advertising, the Federal Trade Commission can do nothing. We have observed the growth of certain publications and the wide sale of certain books containing statements which, if used as labeling for products, would violate the law. We have had several important cases in which the courts ruled that such matter does constitute labeling where it is used for the purposes of labeling. You may recall our successful seizure last year of a lot of blackstrap molasses, with accompanying copies of a book on diet which was a national best seller. This book prescribed blackstrap for a half million or so readers, to prolong life, treat menopausal difficulties, grow hair and correct baldness, restore gray hair to its natural color, prevent nervousness, tiredness and poor digestion, promote normal functioning of the glands and prevent changes due to old age. I think today the blackstrap fad is dead, but there are others.

In the field of nutrition the layman is too often at a loss to know where to go for sound information. Dr. E. V. McCollum stated: "There is no field of knowledge in which there are so many self-appointed advisors, who have judged their fitness for instruction on the basis of personal experiences or credulous belief in attractively presented fallacy. . . . The distinction of fact from fallacy is difficult for those who have sought to become well informed through reading of many authors, some of whom are faddists."

Abstract of an address by C. W. Crawford, U. S. Commissioner of Food and Drugs, delivered at the National Food and Nutrition Institute, Washington, D. C., Dec. 9, 1952.

It is frequently difficult to convince a lay jury of the misleading nature of representations that are made. These false teachings are intriguing to the uninformed, particularly those who want to believe that something is good for them.

What are some of these current myths of nutrition? There is the widespread belief that the nutritive value of a plant depends on the kind of soil on which it is grown and that the nutritive value of meat products depends on whether or not the feed the animal consumed was grown on proper soil. There is an element of truth in this thesis, but the only disease in man that has been associated with deficiencies of the soil is simple goiter. However, we see claims that foods gain almost magic properties through the practice of so-called organic farming. More frequently we see the assertion that we cannot depend on ordinary foods as a source of essential nutrients because the food was grown on impoverished soil, and that we must turn to the pitchman's vitamin and mineral preparations as a supplement to avoid malnutrition. Anyone who has a headache, that tired feeling, or an ache or pain is urged to believe that he is suffering from a "subclinical deficiency" and needs to supplement his diet with some concoction. Of course no normal individual, no matter how well fed, can go through life without experiencing some of these symptoms. There is no basis for believing that such symptoms are frequently due to subclinical deficiencies.

The quack tells us that subclinical deficiencies are almost universal and that unless promptly remedied they may cause serious or fatal diseases. The fact is he is diagnosing or encouraging self-diagnosis of conditions that even experts cannot recognize if they are of nutritional origin. There is always something about the quack's product that makes it superior to anything else. Sometimes he pretends to be allied with the medical profession, but often he attacks the advice of physicians as orthodox and out-of-date. He artfully inspires in the prospect a fear that his diet is nutritionally inferior and that he is suffering or will suffer from about every disease in the dictionary if he does not avail himself of this wonderful supplement.

The outstanding current examples of this kind of salesmanship are the promotions of those food-supplement products containing a multiplicity of vitamins and minerals, all combined with a base of plant extractives, alleged to be derived from plants grown on organically fertilized soils and harvested to prevent loss of highly acclaimed but unidentified nutritional factors.

Quackery in the field of nutrition cannot be dealt with adequately by law. It is largely an educational problem. We must seek to expose quackery in the nutrition field as well as in the strictly medical field. We must warn the public against it. In our educational programs we must encourage the habit of looking into the validity of new theories and concepts of nutrition, the habit of asking what research has been done, the habit of evaluating the adequacy of such research. Nutrition education should always emphasize the distinction between known facts and speculations.

One limitation to consumer protection which can be dealt with through legislative enactment is the absence in existing law of authority to properly regulate the use of food additives, some of which may be harmful. There is a connection between this problem and that of quackery. The use of food ingredients with strange chemical names provides promoters of faddism with effective ammunition. The growing use of food additives has emphasized a serious gap in consumer protection under the Federal Food, Drug, and Cosmetic Act. The law passed in 1938 requires pre-marketing tests of new drugs to insure their safety when used as directed, but it does not require testing of new food additives before they are used. While the authority to prescribe food standards may be exercised to exclude additives whose safety is suspect, the prescribing of standards for each food is a slow process and is not an effective solution of the problem. Under the law as it now stands an ingredient of questionable safety may continue to be used in food until such time as standards can be formulated and become effective or until we have sufficient evidence to prove that it is poisonous or deleterious. This may take years, during which the public may be used as guinea pigs. Most food manufacturers do establish the safety of new ingredients before using them, but some do not.

The Food and Drug Administration has advised Congress that legislation is needed to require adequate testing of these new ingredients of foods. The Committee, after hearings covering a period of two years, has recommended that such legislation be drafted and enacted. It is expected that a bill for this purpose will be introduced in the new Congress.

There is a ferment of competitive development in the food and chemical industries aimed at the improvement of food products and processes to make foods cheaper or more attractive. Not a week goes by that does not bring some proposal for the use of some new substance, hitherto foreign to food, as an ingredient of food or as a component of food wrappers or as a treatment for food plants or animals. New emulsifiers, stabilizers, humectants, mycotics, preservatives, fumigants, antioxidants, are coming along all the time. Livestock raisers are employing drugs to promote growth and fattening, stimulate milk production, protect against disease, and bring about other changes in domestic animals. The use of antibiotics and other drugs in poultry and hog feed is common practice. In addition to being treated with insecticides, fungicides, and herbicides, food crops are subjected to applications of new products to stimulate growth, or thin out immature fruit, or stop dropping of mature fruit or defoliate the plant before harvest.

We have laboratory and clinical methods for acquiring information about the toxicity and effects on nutrition that these substances may impart to foods. It is a disturbing fact, however, that some of the additives now in use have not been adequately studied by our newer methods. I do not mean that we should cease trying to improve the quantity and quality of foods through the use of new substances. Hazards in some degree are inherent in all progress. I do mean to suggest that you keep close watch on these newly additives as they are tested in the laboratory of human experience during the years ahead. Our present abundant food supply is the safest and most nutritious in history. Let us remain vigilant to avoid any decline.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The Council on Medical Education and Hospitals has authorized the following statement for publication.

DONALD G. ANDERSON, M.D., Secretary.

REVISION OF REQUIREMENTS FOR REEXAMINATION BY THE AMERICAN BOARD OF INTERNAL MEDICINE

The following changes have been made in the requirements for reexamination by the American Board of Internal Medicine as published in the Internship and Residency Number of THE JOURNAL (**150:**387 [Sept. 27] 1952):

REEXAMINATIONS—WRITTEN AND ORAL

1. Restrictions on the number of written examinations for which a candidate may apply have been waived. The interval between all written examinations will be not less than one year; however, the executive committee of the board may, at its discretion, require a longer period, or may, for reasons it considers adequate, deny admission to reexamination. A fee of $15.00 is required for each written reexamination. The fee is due upon application for reexamination.

2. Restrictions on the number of oral examinations for which a candidate may apply have been waived. The interval between all oral examinations will be not less than one year; however, the executive committee of the board may, in its discretion, require a longer period, or may, for reasons it considers adequate, deny admission to reexamination. A fee of $40.00 is required for each oral examination. The fee is due upon application for reexamination.

3. This ruling does not make it mandatory for a candidate to repeat the examination within the specified time limit. Candidates may elect a longer interval in the case of both the written and oral examinations.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Am. J. Diseases of Children, Chicago

84:409-542 (Oct.) 1952

Treatment of Convulsions in Childhood. M. G. Peterman.—p. 409.
*Fatal Convulsive Seizures Associated with Cortisone Therapy: Report of Case. L. J. Geppert, A. C. Dietrick, E. H. Johnston and C. J. Lind. —p. 416.
Gargoylism and Morquio's Disease. H. Zellweger, L. Giaccai and S. Firzli.—p. 421.
Diaphragmatic Hernia in Newborn. E. K. Johnson and J. L. Mangiardi. —p. 436.
Partial Intestinal Obstruction Caused by Intraduodenal Septum: Report of Case of Two-Year-Old Infant with Partial Intestinal Obstruction Since Birth. L. A. St. John and H. Tamoney.—p. 439.
Iodized Oil Aspiration in the Newborn. J. DeCarlo Jr., A. Tramer and H. H. Startzman Jr.—p. 442.

Fatal Convulsive Seizures Following Cortisone Therapy.—A 5-year-old boy with symptoms and roentgenographic signs of rheumatoid arthritis was treated with cortisone acetate intramuscularly; he was given 300 mg. the first day, 200 mg. the second day, and 100 mg. daily thereafter. On the sixth day of therapy the blood pressure rose to 140/100 and remained elevated. On the ninth day, when the dose of cortisone was reduced to 50 mg. daily, blood pressure values as low as 120/70 were noted, but at midnight the pressure was 160/100. The diastolic pressure had dropped on the morning of the 10th day, and so 50 mg. of cortisone was again administered. The blood pressure rose and by midnight was 190/150. The child seemed somewhat disoriented and complained of headache. On the 12th hospital day, 24 hours after the last dose of cortisone, tremor and generalized clonic convulsions developed. The patient remained in coma and in a convulsive state until he died, 14 days later. Autopsy revealed no pathological change that could account for convulsions and coma. The immediate cause of death was bronchopneumonia. Although the evidence is not complete, electrolyte imbalance, water retention, cerebral edema, vasospasm, or hypertension, neither individually nor in combination, seem responsible for the initiation of convulsive seizures in this case. Thus no cause for the precipitation of convulsive seizures could be established other than the effect of cortisone on the cerebral cortex.

A.M.A. Arch. Ophthalmology, Chicago

48:393-530 (Oct.) 1952

Tonography. P. C. Kronfeld.—p. 393.
Zonule Membrane and Cataract Expression. D. Vail.—p. 405.
Ocular Complications in Rat Made Diabetic with Alloxan. R. G. Janes, G. W. Bounds Jr. and P. J. Leinfelder.—p. 414.
Syndrome of Cartilage Pathology, Destructive Iridocyclitis, Multiple Joint Dislocations. Comparison with Concurrent Eye and Joint Diseases Described in Literature. A. C. Hilding.—p. 420.
Visual Defects in Deaf Child. E. Stockwell.—p. 428.
Congenital Prepapillary Cyst. P. Tower.—p. 433.
Possible Role of Proprioception in Extraocular Muscles. E. Ludvigh. —p. 436.
Control of Ocular Movements and Visual Interpretation of Environment. E. Ludvigh.—p. 442.
Syphilitic Optic Nerve Atrophy Treated with Penicillin: Observations Two to Six Years After Treatment. C. D. Benton Jr. and J. F. Harris.—p. 449.
Regression of Metastatic Lesions of Breast Carcinoma Following Sterilization. R. A. Ellis and H. G. Scheie.—p. 455.
Simplified Blaskovics Operation for Blepharoptosis: Results in 91 Operations. R. N. Berke.—p. 460.

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Titles marked with an asterisk (*) are abstracted.

A.M.A. Arch. Pathology, Chicago

54:321-406 (Oct.) 1952

Form of Hepatitis in Neonatal Period Simulating Biliary Atresia. J. M. Craig and B. H. Landing.—p. 321.
Effects of Cortisone on Nonperforating Wounds of Cornea in Normal and Scorbutic Guinea Pigs. A. Barber and W. G. Nothacker.—p. 334.
Changing Values of Nucleic Acid of Cells in Bone Marrow During Development of Red Blood Cell. M. L. Menten and M. Willms. —p. 343.
Nucleic Acid in Cells of Bone Marrow of Patients with Pernicious Anemia: Changes in Content Before and After Specific Treatment. M. L. Menten and M. Willms.—p. 351.
Amyloid Localized to the Heart: Analysis of 29 Cases. A. J. Josselson, R. D. Pruitt and J. E. Edwards.—p. 359.
Tumors Produced by Methylcholanthrene in Duck: Papilloma, Squamous-Cell Carcinoma, and Hemangioma. R. H. Rigdon.—p. 368.
Degenerative Changes in Liver Associated with Aspiration of Vernix and Hyaline Membrane Formation in Lungs in Intrauterine Anoxia. R. E. Benitez.—p. 378.
Malakoplakia of Urinary Bladder: Report of Four Cases and Discussion of Etiology. V. R. Bleisch and N. F. Konikov.—p. 388.

American Journal of Physiology, Washington

170:477-744 (Sept.) 1952. **Partial Index**

Mechanisms of Desoxycorticosterone Action. VIII. Effects of Nephrectomy. D. M. Green, R. L. Craig, F. J. Saunders and F. M. Sturtevant. —p. 477.
Comparative Value of Corticosterone, Hydrocortisone and Adrenal Cortex Extract Given by Continuous Intravenous Injection in Sustaining Ability of Adrenalectomized Rat to Work. D. J. Ingle, J. E. Nezamis and E. H. Morley.—p. 498.
Renal Excretion of Substance Closely Related to Thymus Hormone in Man. J. Comsa.—p. 528.
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Production of Circulatory Failure by Electrolyte Depletion. J. W. Remington, R. E. Remington and H. M. Caddell.—p. 564.
Effects of Hypoxia on Pulmonary Circulation of the Dog. B. M. Lewis and R. Gorlin.—p. 574.
Rate of Gas Absorption During Atelectasis. W. A. Dale and H. Rahn. —p. 606.
Platelets and Their Plasma Cofactor Activity in Activation of Purified Prothrombin. S. A. Johnson, W. M. Smathers and C. L. Schneider. —p. 631.
Effect of Chronic Di-Isopropyl Fluorophosphate Intoxication Upon Experimental Epilepsy in Macaca Mulatta. J. G. Chusid, L. M. Kopeloff and N. Kopeloff.—p. 642.
Decreased X-Ray Sensitivity of Mice Following Administration of Ethanol. L. J. Cole and M. E. Ellis.—p. 724.

Annals of Internal Medicine, Lancaster, Pa.

37:453-648 (Sept.) 1952

Electrolytes and Congestive Failure. T. S. Danowski.—p. 453.
*Treatment of Hypertension with Oral Protoveratrine. S. W. Hoobler, R. W. Corley, T. G. Kabza and H. F. Loyke.—p. 465.
Evaluation of Developments in Surgical Treatment of Pulmonary Tuberculosis. J. B. Amberson.—p. 482.
Diagnosis and Management of Asymptomatic Isolated Intrathoracic Nodules. S. E. Wolpaw.—p. 489.
Changes in Connective Tissue Reaction Induced by Cortisone. R. H. Ebert and W. R. Barclay.—p. 506.
Thyroiditis. G. Crile Jr.—p. 519.
Application of Cytologic Diagnosis to Cancers of Stomach, Pancreas and Biliary System. H. M. Lemon.—p. 525.
Gastric Cancer on Ulcer: Clinical Analysis of Series of Cases Conforming Pathologically to Criteria for Malignant Change in Peptic Ulcer of the Stomach. T. R. Waugh and M. D. Charendoff.—p. 534.
Observations on Splenic Flexure Syndrome. T. E. Machella, H. J. Dworken and F. J. Biel.—p. 543.
Latent Steatorrhea. D. G. Cameron, E. H. Bensley and P. Wood.—p. 553.
Systemic Lupus Erythematosus Preceded by False-Positive Serologic Tests for Syphilis: Presentation of Five Cases. J. R. Haserick and R. Long. —p. 559.
Alcoholic Neuritis. W. F. Gorman.—p. 566.

Protoveratrine Orally in Hypertension.—Protoveratrine, a purified derivative of Veratrum album, was given orally to 16 patients with severe hypertension of varied etiology. Results showed that the following dosage program must be adhered to if satisfactory results are to be secured: an initial large dose of 0.5 to 1.5 mg. given after breakfast at 8 a. m. and followed with a small, reinforcing dose of 0.25 mg. at 10 a. m. and a second small reinforcing dose of 0.25 mg. given after lunch at 1 p. m.

The drug was given on this schedule daily for three to nine months. Patients were cautioned to take tablets after meals or not less than one and one-half hours before the next meal. Significant daily reductions in blood pressure lasting six to eight hours were secured in most patients without the occurrence of nausea and vomiting. The drug proved superior to the Veratrum viride derivative "veriloid," which produces, in the authors' experience, too frequent emetic side-effects to be satisfactory for the long-term management of hypertensive patients. Evidence has been presented that the hypotensive action of protoveratrine is particularly useful in the treatment of left ventricular failure. Restoration of vision in malignant hypertension and relief of hypertensive headaches and encephalopathy were also notable beneficial effects. It is emphasized that management of the hypertensive patient with protoveratrine is palliative rather than curative, and that it is particularly useful in alleviating symptoms and lowering blood pressure in patients in whom surgical or dietary treatment is unsuccessful or inapplicable.

Annals of Surgery, Philadelphia

136:555-760 (Oct.) 1952

*Effects of Adrenocortical Stimulation on Thyroid Function: Clinical Observations in Thyrotoxic Crisis and Hyperthyroidism. D. E. Szilagyi, A. B. McGraw and N. P. D. Smyth.—p. 555.

Diagnosis of Pancreatic Disorders by Certain Laboratory Procedures. W. W. Shingleton, W. G. Anlyan and D. Hart.—p. 578.

Effect of Thoracolumbar Sympathectomy and Vagus Resection on Pancreatic Function in Man. R. B. Pfeffer, H. E. Stephenson Jr. and J. W. Hinton.—p. 585.

Adrenalectomy for Mammary Cancer: Surgical Technic of Bilateral One-Stage Adrenalectomy in Man. C. Huggins and T. Ling-Yuan Dao.—p. 595.

Distribution of Axillary Lymph Node Metastases in Carcinoma of Breast. H. H. Davis and D. D. Neis.—p. 604.

*Pancreatoduodenectomy: A "Curative" Operation for Malignant Neoplasms in Pancreatoduodenal Region: Report of Three Over-Five-Year Survivors. A. Brunschwig.—p. 610.

Temporal Lobe Seizures and Technic of Subtotal Temporal Lobectomy. W. Penfield and M. Baldwin.—p. 625.

Metabolism of Fructose as Related to Utilization of Amino Acids When Both Are Given by Intravenous Infusion. R. Elman, M. D. Pareira, E. J. Conrad and others.—p. 635.

*Use of Testosterone in Preventing Postoperative Liver Dysfunction in Poor Risk Surgical Patient. M. A. Hayes, P. E. Hodgson and F. A. Coller.—p. 643.

Magnesium Metabolism in Surgical Patients: Exploratory Observations. B. W. Haynes Jr., E. S. Crawford and M. E. DeBakey.—p. 659.

Gastric Mucin-Chemical and Histologic Study Following Bilateral Vagectomy, Gastric Resection and Combined Procedure. W. L. Mersheimer, G. B. J. Glass, F. D. Speer, and others.—p. 668.

Effect of Ether Anesthesia Upon Alveolar Ventilation and Acid-Base Balance in Man: With Particular Reference to Deficient Ventilation and Its Prevention During Intrathoracic Procedures. J. G. Gabbard, A. Roos, D. E. Eastwood and T. H. Burford.—p. 680.

Hemorrhagic Jejunal Diverticulitis. C. W. Mayo, R. H. Baskin Jr. and A. B. Hagedorn.—p. 691.

Surgical Management of Congenital Atresia of Esophagus and Tracheo-Esophageal Fistula. N. L. Leven, R. L. Varco, B. G. Lannin and L. A. Tongen.—p. 701.

Hysterectomy. J. C. Burch and H. T. Lavely.—p. 720.

Correlation of Renal Function with Clinical Course of Anuria Due to Surgical Complications. C. F. Baxter, E. S. Breed and J. H. Mulholland.—p. 733.

Blood Replacement and Gastric Resection for Massively Bleeding Peptic Ulcer. J. D. Stewart, G. M. Sanderson and C. E. Wiles Jr.—p. 742.

Analysis of the Vagotomy Controversy. G. Crile Jr.—p. 752.

Effects of Adrenocortical Stimulation on Thyroid Function.—Corticotropin was given to three patients with severe thyrotoxic crisis who had failed to respond to other measures, and to five patients with hyperthyroidism due to Graves' disease (four cases) or adenomatous goiter (one case) who had presented unusual difficulties in preparation for thyroidectomy. In the cases of hyperthyroidism the action of corticotropin on the thyroid gland was ascertained by serial determinations of blood cholesterol, protein-bound iodine, basal metabolic rate, and radioiodine (I^{131}) uptake and excretion. All three patients with thyrotoxic crisis recovered. In hyperthyroidism the clinical course was only moderately or slightly improved; however, all patients who were pretreated with corticotropin and with very inadequate amounts of iodine or no iodine (one case) withstood a radical subtotal thyroidectomy remarkably well. Corticotropin does not seem to add anything to the current methods of medical treatment of hyperthyroidism. In cases of thyrotoxicosis in which surgical treatment is required and conventional medication is partly or wholly ineffective, corticotropin (or cortisone) is helpful in preparing the patient for operation. The use of these hormones in the treatment of thyrotoxic crisis likewise seems justified. It is believed that the beneficial effect of corticotropin was actuated through the antistress response of the adrenal cortex.

Pancreatoduodenectomy as a Curative Operation.—The histories of three patients are presented whose malignant neoplasms were so situated (in the papilla of Vater, head of pancreas, and second portion of the duodenum) as to require pancreatoduodenectomy for their excision. They have so far survived eight, seven, and five years respectively. Two of these patients had extensive regional lymph node metastases. These case histories reveal that pancreatoduodenectomy is beyond the experimental stage and can afford five-year cures for malignant neoplasms in the region of the duodenum and head of the pancreas. The author explains his technique of pancreatoduodenectomy by means of a schematic representation.

Testosterone to Prevent Postoperative Liver Dysfunction.—Volatile anesthetic agents exert hepatotoxic effects; the degree of damage they produce varies with the nutritional state and the type of diet. The liver of patients with both caloric and essential food deficiencies is most vulnerable to further damage. The eight patients selected for study had esophagogastric neoplasms so located as to prevent the oral intake of either food or fluids. The weight losses ranged from 13 to 28 lb. (5.9 to 12.7 kg.). The duration of food restrictions averaged seven weeks. In all of these patients the entire nutritional and fluid requirements were supplied by the intravenous route. Three of these patients received daily a single intramuscular injection of 50 mg. of testosterone propionate, beginning seven days before operation and continuing through the period of this study. The five control patients received no steroid therapy. All eight patients were anesthetized with a nitrous oxide, ether, and oxygen mixture and were subjected to major abdominal operations. The addition of the steroid therapy to parenteral alimentation resulted in a net gain in protein for the body (which in turn implies a gain in the liver) and a net gain in glycogen in the liver. With these primary aims toward the protection of the liver attained, only minimal changes in liver function resulted from the anesthetic and operative trauma in the three who were given testosterone propionate. Postoperative liver dysfunction can be prevented by adequate parenteral alimentation, plus testosterone propionate. This regimen is of particular value in the poor risk patient.

Arizona Medicine, Phoenix

9:1-68 (Oct.) 1952

The Korean War as Seen by an Arizona Physician. P. W. Bailey.—p. 21.

Kaposi's Idiopathic Hemorrhagic Sarcoma. A. I. Ramenofsky, J. D. Barger, R. H. Snapp and L. G. Jekel.—p. 24.

Emotional Problems of Children. H. F. Shirley.—p. 26.

Acute Allergic Conditions of the Abdomen: Clinical Report. F. B. Schutzbank.—p. 32.

Principles in Oncology. L. Lindberg.—p. 35.

Congenital Dislocation of Hip in the Practice of Every Physician. H. E. Crowe.—p. 38.

Arkansas Medical Society Journal, Fort Smith

49:77-92 (Oct.) 1952

Carcinoma of the Larynx. A. J. Brizzolara.—p. 77.

Surgery of the Hand. K. G. Jones.—p. 79.

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Treatment of Exfoliative Dermatitis with Cortisone and ACTH. R. E. Schirmer.—p. 85.

Ovarian Pregnancy: Report of Case. W. E. Jennings.—p. 86.

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Anxiety Neurosis and Prognosis of Heart Disease. R. Hood.—p. 93.

Accidents—Chief Cause of Death in Children. J. L. Rosenzweig.—p. 96.

Management of Chronic Pulmonary Insufficiency: Including a Preliminary Report on Use of Expiratory Positive Pressure Oxygen Therapy. W. O. Arnold and R. J. Carabasi.—p. 98.

Bulletin of Johns Hopkins Hospital, Baltimore

91:323-418 (Nov.) 1952

Comparison of Efficacy of Chloramphenicol (Chloromycetin) and of Penicillin in Treatment of Pneumococcal Lobar Pneumonia. A. Austrian, L. E. Cluff, G. S. Mirick and others.—p. 323.
Antidiuretic Activity of Some Organic Acids. K. C. Blanchard, E. H. Dearborn, L. C. Lasagna and E. L. Buhle.—p. 330.
Fatal Pancytopenia Following Therapy with Nuvarone® (3-Methyl, 5-Phenylhydantoin): Case Report. P. H. Pearson, J. L. Peck and S. Livingston.—p. 341.
Diffuse Pulmonary Sarcoidosis: Diffusing Capacity During Exercise and Other Lung Function Studies in Relation to ACTH Therapy. R. L. Riley, M. C. Riley and H. M. Hill.—p. 345.
*Effects of Adrenocorticotropic Hormone (ACTH) and Cortisone on Sarcoidosis. L. E. Shulman, E. H. Schoenrich and A. M. Harvey.—p. 371.

Corticotropin and Cortisone in Sarcoidosis.—The constitutional reaction to sarcoidosis is usually not severe, but loss of vision, impairment in respiratory function, and death due to failure of the heart or invasion of the kidneys may ensue. In view of the frequency with which tuberculosis develops in patients with sarcoidosis, and because of the possible deleterious effect of intensive adrenal cortical activity on tuberculosis, only 15 patients who had the aforementioned functional disturbances were treated with one or more courses of corticotropin (ACTH) or cortisone. Regression of the active disease occurred, but the organ systems in which long-continued sarcoidosis had produced extensive fibrotic change showed little, if any, improvement. After cessation of corticotropin treatment, some patients had a prolonged remission, others experienced prompt relapse, and others had continued suppression of some manifestations and reactivation of others. A few patients, after a relapse, again had a remission. Fever and tachycardia were reduced in all patients. Acute sarcoid uveitis subsided in eight patients; return of vision, however, occurred only in those in whom uveitis was of recent onset. The tendency towards relapse was great. Respiratory symptoms and pulmonary signs disappeared. Skin and subcutaneous manifestations cleared in 9 of 10 patients but in 5 the lesions gradually reappeared. Enlargement of peripheral lymph nodes subsided in 11 of 13 patients during treatment, and they remained impalpable during the post-treatment period in six. Regression of the enlarged mediastinal lymph nodes was observed on 10 of 12 patients, but it was never complete and relapse occurred in eight. Regression of hepatic and splenic enlargement occurred in the majority of patients. The enlargement of the parotid gland subsided in all four patients with uveoparotid fever, in two of whom there was a transient recurrence. The serum calcium concentration decreased in three patients with hypercalcemia who also had renal disease. In one of these renal function improved during several courses of corticotropin or cortisone. Increased muscle strength resulted from corticotropin in a patient with severe muscular wasting due to sarcoid tubercles, but no significant change occurred in three patients with rarefaction of bone. In most patients there were reductions in the erythrocyte sedimentation rate, serum globulin concentration, cephalin-cholesterol flocculation, and thymol turbidity. None of the patients showed signs of tuberculosis during or after treatment.

Bulletin New York Academy of Medicine, New York

28:621-690 (Oct.) 1952

On Extracorporeal Dialysis of Blood in Acute Anuria. Importance of β-Oxidation in Kidney Tubules. I. Snapper.—p. 621.
Management of Nephrotic Syndrome. C. M. Riley.—p. 630.
Fetal and Neonatal Risks Related to Cesarean Section. W. E. Studdiford and W. H. Decker.—p. 640.
Spinal Cord and Local Signs Secondary to Occult Sacral Meningoceles in Adults. J. L. Pool.—p. 655.
*On the Metabolic Defect in Gout. D. Stetten Jr.—p. 664.

Metabolic Defect in Gout.—Gout is characterized by an error in the metabolism of uric acid that results in an elevation of the level of serum uric acid and a tendency toward the precipitation of salts of uric acid, urates, as tophi in the cartilages. Studies were made to compare the distribution of intravenously injected uric acid labeled with isotopes in normal men and in patients with gout. Uric acid was so synthesized as to contain nitrogen enriched with N^{15}. Normal men were maintained on essentially purine-free diets sufficiently rich in protein to preserve nitrogen balance. Each subject received a single small intravenous injection of labeled uric acid, and thereafter uric acid was isolated in pure state from daily urine samples and analyzed on the mass spectrometer for abundance of N^{15}. The "miscible pool of uric acid" is defined as that quantity of uric acid in the body of the subject that is capable of mixing promptly with intravenously injected uric acid and consequently of diluting its isotope. From a comparison of the concentrations of N^{15} in the uric acid injected and in that present in the body at the moment of mixing, together with knowledge of the quantity of uric acid injected, the quantity of uric acid present in the miscible pool may be calculated. The second type of information relates to the fact that with the passage of time after the initiation of such an experiment, the concentration of N^{15} in the uric acid of the body declines. From the rate of decline in N^{15} abundance, the rate of generation of uric acid, or its turnover, may be estimated. The results obtained in these studies indicate that in the gouty subject a larger than normal fraction of dietary glycine is utilized for the synthesis of uric acid, which is promptly excreted in the urine. This increased generation of uric acid from dietary nitrogenous precursors, operating over a prolonged period, is adequate to account for the increase in size of the miscible pool of uric acid seen in gout. The deflection of an abnormally large portion of dietary glycine into uric acid synthesis, further exaggerated when the diet is rich in protein, and apparently short-circuiting the large body reservoirs of purines, is reminiscent of the normal situation in birds and reptiles, and suggests that the metabolic defect in gout may be an increase in uric acid production in a predominantly urea-producing species.

California Medicine, San Francisco

77:213-284 (Oct.) 1952

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Cardiorespiratory Function. H. L. Motley.—p. 220.
Operations on Large Arteries: Application of Recent Advances. N. E. Freeman and F. H. Leeds.—p. 229.
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Leukemia: Duration of Life in Children Treated with Corticotropin and Cortisone. H. R. Bierman, K. H. Kelly, N. L. Petrakis and M. B. Shimkin.—p. 238.
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Vitamin U Therapy of Peptic Ulcer. G. Cheney.—p. 248.
Hypothalamic Dysfunction: Review of Experimental and Clinical Observation of Cardiac and Renal Aspects. S. J. Weinberg.—p. 252.
Retrolental Fibroplasia: Blindness in Infants of Low Weight at Birth. A. Appelbaum.—p. 259.

Cancer Research, Chicago

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Liver Nucleic Acid Incorporation of Adenine-8-C^{14} During Azo Dye Carcinogenesis. A. C. Griffin, W. E. Davis Jr. and M. O. Tifft.—p. 707.
Transpulmonary Passage of Tumor Cell Emboli. I. Zeidman and J. M. Buss.—p. 731.
Differential Growth of Metastatic Tumors in Liver and Lung: Experiments with Rabbit V Carcinoma. B. Lucké, C. Breedis, Z. P. Woo and others.—p. 734.

Endocrinology, Springfield, Ill.

51:157-266 (Sept.) 1952. Partial Index

Nature of Conjugated Estrone in Human Pregnancy Urine. I. B. Oneson and S. L. Cohen.—p. 173.
Hormonal Interaction in Regulation of Granulation Tissue Formation. M. Taubenhaus, B. Taylor and J. V. Morton.—p. 183.
Inhibition of Phosphorylase with Cortisone and Its Activation with Adrenaline in Rabbit. W. Kerppola.—p. 192.
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Florida Medical Association Journal, Jacksonville

39:313-382 (Nov.) 1952

SYMPOSIUM ON HYPERSPLENISM

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Gastroenterology, Baltimore

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*Posthepatitic and Alcoholic Cirrhosis: Clinicopathologic Study of 43 Cases of Each. A. H. Baggenstoss and M. H. Stauffer.—p. 157.
Clinical Significance of Co-Existence of Peptic Ulcer and Portal Cirrhosis, with Special Reference to Problem of Massive Hemorrhage. W. F. Lipp and M. H. Lipsitz.—p. 181.
*Subtotal Gastrectomy With and Without Vagotomy in Treatment of Duodenal Ulcer. V. A. Weinstein, L. J. Druckerman, P. Klingenstein and R. Colp.—p. 192.
"Gastritis" and Its Sequelae. J. R. Ross, B. G. Griffin and S. M. Jordan.—p. 205.
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Effects of Vagotomy on Colonic Function: Observations Through a Transverse Colostomy in Patient with Ulcerative Colitis. J. Wener, H. S. Morton and A. Polonsky.—p. 250.
Use of Procaine Hydrochloride by Mouth for Gastrointestinal Disorders. D. C. Balfour Jr. and G. K. Wharton.—p. 257.
Inhibition of Gastric Acid Production in Intact Dog with Sodium Lauryl Sulfate. R. F. Grover, C. A. Maaske, L. L. Hardt and J. B. Henderson.—p. 263.

Posthepatitic and Alcoholic Cirrhosis.—Baggenstoss and Stauffer were concerned particularly with the types of cirrhosis found at necropsy as sequelae to viral hepatitis in 43 cases. Inasmuch as the morphological features of posthepatitic cirrhosis have not yet been delineated clearly, the authors studied an equal number of cases of cirrhosis in which there had been a history of heavy consumption of alcohol (alcoholic or Laennec's cirrhosis). The diagnosis of cirrhosis in both groups of 43 cases each rested on the following criteria: degeneration and death of hepatic cells, increase in connective tissue, and the presence of nodular parenchymal regeneration. The patients who had posthepatitic cirrhosis were in general younger and were predominantly women. Jaundice and signs of hepatic insufficiency dominated the clinical picture in this type. The patients who had alcoholic cirrhosis were in general older and were predominantly men. A palpable liver, ascites, and hemorrhage from varices dominated the clinical picture in this type. Hepatic insufficiency was the commonest cause of death in both types of cirrhosis, but hemorrhage from varices and intercurrent infections were more frequent in the alcoholic type than in the posthepatitic type. Unusually high values for serum globulin and unusually low values for blood cholesterol were features in some cases of posthepatitic cirrhosis. Unusually high leukocyte counts in the absence of intercurrent infection were often found in cases of alcoholic cirrhosis. Leukopenia was more commonly noted in posthepatitic cirrhosis. At necropsy, ascites and esophageal varices were present oftener in cases of alcoholic cirrhosis. The mean weight of the liver in alcoholic cirrhosis was almost twice that in posthepatitic cirrhosis. The outstanding gross features of the liver in the latter type were the large regenerative nodules and the broad zones of atrophy. The livers in alcoholic cirrhosis were larger and granular and often showed fat infiltration. In seven cases of posthepatitic cirrhosis the gross and histological features were similar to those encountered in nonfatty alcoholic or Laennec's cirrhosis, and in four cases of alcoholic cirrhosis the gross and histological features were similar to those encountered in posthepatitic cirrhosis.

Subtotal Gastrectomy With and Without Vagotomy in Duodenal Ulcer.—At a New York hospital during the five and one-half years ending July 1, 1951, subtotal gastrectomy was done in 210 cases of duodenal ulcer and subtotal gastrectomy with vagotomy in 155 cases. Approximately one-third of the patients in each group had had one or more episodes of severe bleeding, and 10% in each group had had previous perforation of an ulcer. It was found that the symptoms occurring during the convalescent period attributable to altered gastrointestinal function were most frequent in the group subjected to the combined operation. The severe pain and bleeding of recurrent ulceration, however, occurred only in the group treated by subtotal gastrectomy alone. There were 10 cases of recurrent disease among the patients treated by subtotal gastrectomy alone, and none in those treated by the combined operation. Studies on the gastric acidity revealed a greater percentage of patients with anacidity after gastrectomy and vagotomy combined than after gastrectomy alone. These results indicate that the vagotomy afforded additional protection against recurrent ulceration at the cost of a slight increase in the immediate postoperative morbidity and later symptoms. It may be argued that vagotomy should be reserved for the few patients who develop jejunal ulceration after gastrectomy and thus avoid the untoward sequelae of vagotomy in most cases. However, in 20 postgastrectomy jejunal ulcers for which vagotomy was performed, about half the patients were not benefited. Seemingly vagotomy is more effective as a preventative measure than it is as a therapeutic one after jejunal ulcer has appeared. The author feels that no definite conclusions can be drawn after relatively short periods of follow-up, since recurrent ulceration has been known to occur as long as 30 years after corrective surgery. Nevertheless, the results of the combined procedure are sufficiently encouraging to warrant its employment in all cases of chronic duodenal ulcer in which the additional vagotomy does not add materially to the operative risk.

GP (J. Am. Acad. Gen. Practice), Kansas City, Mo.

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Neurologic Complications of Infectious Diseases. L. Weinstein.—p. 67.
Practical Therapeutics; Prevention and Treatment of Acute Barbiturate Intoxication. J. F. Fazekas and T. Koppanyi.—p. 78.

Illinois Medical Journal, Chicago

102:285-344 (Nov.) 1952

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Use of Anti-Convulsant in Tetanus. A. E. Joslyn.—p. 321.

Iowa State Medical Society Journal, Des Moines

42:519-560 (Nov.) 1952

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Journal of Aviation Medicine, St. Paul.

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Exposure Hazards from Cosmic Radiation Beyond Stratosphere and in Free Space. H. J. Schaefer.—p. 334.
Radiation Hazards in High Altitude Aviation. C. A. Tobias.—p. 345.

Journal Clin. Endocrin. & Metab., Springfield, Ill.

12:1117-1258 (Sept.) 1952

Urinary Dehydroisoandrosterone in Hyperadrenocorticism: Influence of Cortisone, Hydrocortisone and ACTH. L. I. Gardner and C. J. Migeon.—p. 1117.
Metabolic Studies in Patients with Congenital Adrenal Hyperplasia: Effects of Cortisone Therapy. V. C. Kelley, R. S. Ely and R. B. Raile. —p. 1140.
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Effect of Androgens on Urinary Excretion of Ketosteroids, Nonketonic Alcohols and Estrogens. I. T. Nathanson, L. L. Engel, R. M. Kelley and others.—p. 1172.
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*Blood Radioiodine Concentration and Blood Radiation Dosage During I^{131} Therapy for Metastatic Thyroid Carcinoma. S. M. Seidlin, A. A. Yalow and E. Siegel.—p. 1197.
*Effect of Propylthiouracil on Thyroid Uptake of I^{131} and Plasma Conversion Ratio in Hyperthyroidism. A. L. Schultz and W. E. Jacobson. —p. 1205.
Calculation of Protein-Bound Iodine from Kinetic Data. W. T. Caraway. —p. 1215.
Temporary Hypoparathyroidism Following Radioactive Iodine Treatment for Thyrotoxicosis. W. J. Tighe.—p. 1220.
Periodic Paralysis Associated with Thyrotoxicosis: Case Report. L. Weissman.—p. 1223.
Congenital Testicular Deficiency: I. Absence of Spermatogonia, Sertoli and Leydig Cells as Cause of Eunuchoidism with Cryptorchidism. A. R. Sohval and L. J. Soffer.—p. 1229.
Two-Year Follow-Up on Effect of Pituitary Adrenocorticotropic Hormone (ACTH), Cortisone and Cortisone Ointment in Case of Pemphigus Foliaceus. C. D. Bonner and F. Homburger.—p. 1239.

Blood Radioiodine Concentration and Radiation Dosage.—The radiation delivered to the blood of 23 patients with metastatic thyroid carcinoma by the gamma rays from therapeutic doses of I^{131} was determined from the concentration of I^{131} in serial blood samples after ingestion of the isotope. Results published by other workers showed that the ratio of the average I^{131} concentration in the body to that in whole blood varies with time and equals 1:2 or less. To give a reasonable upper limit for the radiation received, this ratio was assumed by the authors to be 1:2. They calculated that the average specific radiation dosage to the blood (roentgens equivalent physical [rep] per 100 mc. of I^{131} administered) was 52 ± 31. The range was from 20 to 182 rep per 100 mc. The maximum total body radiation delivered following a single dose of radioiodine was calculated to equal 160 rep. No untoward effects followed administration of a single therapeutic dose of radioiodine except temporary leukopenia. On the other hand, after extensive treatment with several large doses of radioiodine, persistent leukopenia developed in 2 of 13 patients. The effect of thyroidectomy on radiation delivered to the blood of five patients was studied. For these patients, blood I^{131} curves were obtained immediately following administration of the I^{131} dose employed to effect a radiation thyroidectomy and after a total of 11 post-thyroidectomy therapeutic doses. Although the blood I^{131} concentration was lower for the first two days following a radiation thyroidectomizing dose than during the same period following a post-thyroidectomy dose, the reverse was usually observed after the first two days. A characteristic rise in the blood radioiodine concentration was observed following thyroidectomizing doses to euthyroid patients and following 25% of the therapeutic doses administered to totally thyroidectomized patients with functioning thyroid metastases.

Effect of Propylthiouracil on Thyroid Uptake of I^{131}.—In nine hyperthyroid patients the thyroid uptake of I^{131} and the plasma I^{131} conversion ratio were studied before, during, and shortly after treatment with propylthiouracil in doses of 300 mg. daily for from 14 to 60 days. Prior to treatment the mean maximum I^{131} uptake by the thyroid during the first 48 hours after administration of a tracer dose was 74% and the mean plasma conversion ratio was 67%. Analysis of the thyroid uptake curves revealed a mean rate constant of $40.7 \pm 17.8\%$ per hour. Treatment produced the following changes: The quantity of I^{131} accumulated by the thyroid gland was reduced, but the rate constant for the thyroid uptake curve was not significantly changed. The mean curve of I^{131} uptake was reduced by 47 to 54% for all time intervals from 4 to 48 hours after administration of the tracer dose. The reduction was less during the first two hours after the tracer dose. There was, however, no evidence of an early peak in the curve of thyroid uptake, nor of a rapid release of accumulated radioactivity. The plasma conversion ratio was reduced to euthyroid levels. At 24 hours the percentage of reduction in the mean conversion ratio was significantly greater than the percentage of reduction in the mean thyroid uptake of I^{131}. When propylthiouracil was given to hyperthyroid patients for less than two months and then stopped, a period of six days was adequate for complete return of the thyroid uptake of I^{131} and the plasma conversion ratio to the pretreatment hyperthyroid levels. This occurred even though the patients remained clinically improved. Analysis of the thyroid uptake curves revealed no increase in either the rate of thyroid uptake or the maximum thyroid accumulation of radioactive iodine over the pretreatment level. The authors' data support the concept that propylthiouracil primarily blocks hormone synthesis by the thyroid gland.

Journal of Clinical Investigation, New York

31:859-946 (Oct.) 1952

Study of Nutritional Defect in Wernicke's Syndrome: Effect of Purified Diet, Thiamine, and Other Vitamins on Clinical Manifestations. G. B. Phillips, M. Victor, R. D. Adams and C. S. Davidson.—p. 859.
Cardiovascular and Renal Adjustments to Hypotensive Agent (1-Hydrazinophthalazine: Ciba BA-5968: Apresoline). E. L. Wilkinson, H. Backman and H. H. Hecht.—p. 872.
Adrenal Virilism: II. Metabolic Studies. J. W. Jailer, J. Louchart and G. F. Cahill.—p. 880.
Effect of Experimental Venous Obstruction on Salt and Water Distribution and Excretion. M. F. Levitt, L. B. Turner and A. Y. Sweet. —p. 885.
Relationship of Renal Clearances of T-1824 and of Albumin in Some Patients with Proteinuria. F. P. Chinard, H. D. Lauson and H. A. Eder.—p. 895.
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Some Hormonal Aspects of Water Excretion in Man. A. Leaf, A. R. Mamby, H. Rasmussen and J. P. Marasco.—p. 914.
Absorption of Glucose and Methionine from Human Intestine; Influence of Glucose Concentration in Blood and in Intestinal Lumen. A. J. Cummins.—p. 928.
Measurement of Glomerular Filtration Rate in Children with Kidney Disease. G. Mattar, H. L. Barnett, H. McNamara and H. D. Lauson. —p. 938.

Journal of Clinical Nutrition, Allentown, Pa.

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Growth Failure in School Children: Further Studies of Vitamin B_{12} Dietary Supplements. N. C. Wetzel, H. H. Hopwood, M. E. Kuechle and R. M. Grueninger.—p. 17.
Hypovitaminemia A: Effect of Vitamin A Administration on Plasma Vitamin A Concentration, Conjunctival Changes, Dark Adaptation and Toad Skin. J. E. Kirk and M. Chieffi.—p. 37.
Effects of Amino Acid Deficiency in Man. A. A. Albanese.—p. 44.
Therapeutic Uses of Low Fat, Low Cholesterol Diets: I. Treatment of Essential Familial Xanthomatosis. F. Urbach, E. A. Hildreth and M. T. Wackerman.—p. 52.
Overnutrition and Obesity. H. H. Mitchell.—p. 66.

J. Pharmacology & Exper. Therap., Baltimore

106:129-252 (Oct.) 1952

Studies of Metabolism of Gallium: III. Deposition in and Clearance from Bone. H. C. Dudley and H. H. Marrer.—p. 129.
Effect of Hexamethonium Chloride on Cardiovascular and Renal Hemodynamics and on Electrolyte Excretion. J. H. Moyer, R. A. Huggins, C. A. Handley and L. C. Mills.—p. 157.
Hydrolysis and Excretion of Polymeric Phosphate. R. E. Gosselin, A. Rothstein, G. J. Miller and H. L. Berke.—p. 180.
Separation and Assay of Acetylcholine in Tissue Extracts. G. A. Bentley and F. H. Shaw.—p. 193.
Fate of Benzazoline (Priscoline) in Dog and Man and Method for Its Estimation in Biological Material. B. B. Brodie, L. Aronow and J. Axelrod.—p. 200.
On Mechanism of Cardiovascular Actions of Digitalis; Observations on Influence of Flaxedil, Atropine or Vagotomy. K. I. Melville.—p. 208.
Potentiation by Epinephrine of Anesthetic Effect in Chloral and Barbiturate Anesthesia. P. D. Lamson, M. E. Greig and L. Williams. —p. 219.

Kansas Medical Society Journal, Topeka

53:465-508 (Oct.) 1952

Instance of Possible Transmission of Acute Thyroiditis. G. W. Nice and R. Chess.—p. 465.
Premature Rupture of Membranes with Report of Case. N. C. Siebert. —p. 467.
Congenital Defects of Kidney with Abdominal Pain. J. W. Warren Jr. —p. 470.
General Practice Today. P. Williamson.—p. 472.

Kentucky State Medical Assn. Journal, Bowling Green

50:363-414 (Sept.) 1952

Why Anemia? H. Jeter.—p. 387.
Ionizing Radiation Injury from Atomic Bombs. E. DeCoursey.—p. 391.
Acute Idiopathic Pericarditis Treated with Cortisone. M. M. Weiss. —p. 393.
Psychosis with Myxedema. C. Wiesel.—p. 395.

50:415-458 (Oct.) 1952

Not in the Thing Itself. H. Beckman.—p. 145.
*Celiac Syndrome: Treatment with Diet and Liver Extract. W. R. Wilson. —p. 417.
Diagnosis of Diabetes Mellitus. B. H. Hollis and A. T. Hurst.—p. 427.
Modern Treatment of Diabetes Mellitus. H. T. Ricketts.—p. 429.
Surgery of Patient with Diabetes Mellitus. C. M. Bernhard and W. H. Bizot.—p. 433.
Treatment of Malignant Lymphomas by Radiation Therapy and Chemotherapy. D. Shapiro.—p. 436.
Carcinoid of Rectum, Including a Case Report. M. A. Lucas and J. E. Ryan.—p. 440.

Treatment of Celiac Syndrome.—Since the celiac syndrome was first recognized by Gee in 1888, the generally accepted treatment has been a low fat and high protein diet. By 1935, however, it was discovered that some patients with so-called celiac disease did not respond to this diet and had in addition cough and pulmonary infections. These patients were found to have cystic fibrosis of the pancreas. Both conditions have in common steatorrhea, enlargement of the abdomen and wasting, but these manifestations arise from different underlying causes, namely, from a defective absorption by the intestinal mucous membrane in the idiopathic celiac syndrome, and an absence or diminution of pancreatic ferments in cystic fibrosis. This paper is concerned only with 37 cases of the celiac syndrome seen in the decade of 1940-1950 at the Grace-New Haven Community Hospital. All patients were treated with the usual dietetic regimen and were given injections of crude liver extract in addition. Follow-up studies on 23 patients indicate the complete recovery of 22, while one is still receiving treatment. Injections of liver extract seem to be a valuable adjunct to the dietary treatment, and may be decisive in severe cases.

Maine Medical Association Journal, Portland

43:317-342 (Oct.) 1952

Massive Gastro-Duodenal Bleeding of Non-Malignant, Non-Cirrhotic Origin: Review of Clinical Experience. J. M. Parker.—p. 317.
Surgical Treatment of Intractable Pain. A. S. Crawford.—p. 321.
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A Kit for Treatment of Poisonings. W. G. Strout and C. S. Dwyer. —p. 331.

Maryland State Medical Journal, Baltimore

1:429-482 (Sept.) 1952

Lower Midline Incision. C. B. Marek and J. R. Dolce.—p. 447.

1:483-536 (Oct.) 1952

Contraindications to ACTH and Cortisone: Panel Discussion. W. B. Allan, A. M. Harvey and J. C. Krantz Jr.—p. 485.
*Mushroom Dermatitis. H. H. Hopkins. —p. 504.
Role of the Physician as a Citizen. A. R. Koontz.—p. 506.

Mushroom Dermatitis.—A man, aged 40, who for about one year had worked in a plant where mushrooms were grown commercially complained of an itching eruption on his hands and eyelids. Four months previously he had picked mushrooms in a room that had been profusely dusted with an insecticide powder said to contain a nicotine compound. After this exposure, blisters appeared on the pads of the fingers and thumb of the left hand, which he used to pluck the mushrooms, and on the pad of the right thumb, upon which impinged the cutting edge of a knife used to cut off the root of each mushroom. The eruption persisted, and in a few days the eyelids became swollen and inflamed. The patient, according to his subsequent story, was convinced that the condition was caused by exposure to the insecticide. At first he continued to work, but then was forced to stop. After being away from work for two weeks, the condition greatly improved, but a relapse occurred after he returned to work. Subsequently he had repeated remissions and exacerbations. The history and distribution of the eruption indicated that it was caused by contact with mushroom or the insecticide and that the eyelid involvement was due to the same contactant transferred to the eyelids by the fingers. Patch tests proved that mushrooms were the cause of the eruptions. After the patient was removed from all contact with mushrooms, recovery was almost complete in seven days.

Medical Annals of District of Columbia, Washington

21:531-584 (Oct.) 1952

Therapy with Adrenocorticotropin (ACTH) and Cortisone. L. H. Kyle. —p. 531.
Polyps of the Gastrointestinal Tract: Challenge in Preventive Medicine. H. M. Giffin.—p. 541.
Unusual Diseases of the Spleen. B. E. Nunez.—p. 548.

Michigan State Medical Society Journal, Lansing

51:1250-1368 (Oct.) 1952

How Can We Have Better Medicine? P. de Kruif.—p. 1289.
Milestones in Our Knowledge of Diabetes Mellitus. B. C. Lockwood. —p. 1295.
Comparison of Diabetic Control with NPH and Globin Insulin: Preliminary Report. J. T. Beardwood Jr., C. R. Tittle and R. M. Packer Jr.—p. 1298.
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Fracture of the Maxilla. C. L. Straith and R. E. Straith.—p. 1319.
Abscesses of Liver and Right Subdiaphragmatic Region. S. W. Hartwell. —p. 1325.
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Military Surgeon, Washington, D. C.

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Local Anesthesia Techniques for Face, Head and Neck. A. D. Alexander. —p. 354.
Clinical Symptoms of Radiation Sickness, Time to Onset and Duration of Symptoms Among Hiroshima Survivors in Lethal and Median Lethal Ranges of Radiation. M. L. Clark and F. X. Lynch.—p. 360.

New England Journal of Medicine, Boston

247:585-624 (Oct. 16) 1952

Contributions of George Richards Minot to Experimental Medicine. W. B. Castle.—p. 585.
*Comparison of Diuretic Effects of Mercuhydrin (Meralluride) Administered by Several Routes. R. Marsh, T. Greiner, H. Gold and others. —p. 593.
Succinylcholine: New Approach to Muscular Relaxation in Anesthesiology. F. F. Foldes, P. G. McNall and J. M. Borrego-Hinojosa.—p. 596.
General Practitioner and Cancer of Ear, Nose and Throat. D. Miller. —p. 601.
Some Biologic and Clinical Problems Related to Intracellular Parasitism in Brucellosis. W. W. Spink.—p. 603.

Diuretic Effects of Mercuhydrin Administered by Several Routes.—Marsh and associates studied the relative effectiveness of mercuhydrin (meralluride®), an organic mercurial diuretic, when administered by various routes. For intravenous, intramuscular, and subcutaneous injections the sterile multiple-dose vials of 10 cc. of the commercial solution of mercuhydrin sodium were selected. For oral administration, the authors used tablets containing 60 mg. of mercuhydrin, and also commercial tablets containing a similar amount of mercuhydrin, together with

100 mg. of ascorbic acid. For use rectally, mercuhydrin suppositories containing 270 mg., 400 mg., and 600 mg. of the drug, respectively, were used. A group of 49 ambulant patients with moderate to moderately severe congestive heart failure participated in these assays. Rheumatic, hypertensive, arteriosclerotic and other forms of heart disease were represented. Experience with these patients in various other assays of mercurial diuretic agents had established that, 24 hours after an effective dose, the average body weight of the group showed a significant fall, returning to the control level within a week. In this study a dose of mercuhydrin produced substantially the same amount of diuretic effect when given by intravenous, intramuscular, or subcutaneous injection. Mercuhydrin was much less effective by the oral route than by injection; approximately 25 times as much was required by oral administration as by intramuscular injection to produce the same effect, and the largest doses given by mouth, which caused gastrointestinal irritation in approximately a third of the patients, produced only a small diuretic effect, equal to that of less than 0.5 cc. of mercuhydrin by intramuscular injection. This study failed to confirm that ascorbic acid in the doses commonly used enhances the diuretic action of mercuhydrin or that ascorbic acid reduces gastrointestinal irritation after oral doses of the mercurial.

North Carolina Medical Journal, Winston-Salem

13:537-592 (Oct.) 1952

*Surgical Significance of Gastric Analysis. C. G. Bennett and N. A. Womack.—p. 537.
Hip Prosthesis: Its Contribution to Reconstruction Surgery of the Hip. H. Winkler and K. L. Jordan.—p. 546.
Rural Medical Care in North Carolina. F. C. Hubbard.—p. 551.
Histoplasmin Sensitivity in Selected Areas of North Carolina with Report of Case of Probable Histoplasmosis in a Child. R. J. Murphy and W. H. Davis Jr.—p. 556.
Management of Gout. H. L. Valk.—p. 560.
Clinical Evaluation of Cortisone in Ophthalmology. C. B. Chandler, S. D. McPherson Jr. and F. W. Stocker.—p. 563.
Local Use of Chloromycetin in Infected Ears. J. R. Ausband and J. A. Harrill.—p. 568.
Treatment of Septal Abscess. W. H. Mills.—p. 571.
Experiences with Papanicolaou Smear. T. W. Huey Jr., P. Kimmelstiel and R. E. Pixley.—p. 574.

Surgical Significance of Gastric Analysis.—It is important for the surgeon to know which of two secretory mechanisms is at fault in the excessive gastric secretion that accompanies peptic ulceration. If the humoral mechanism is excessively stimulating the gastric gland, resection of the antrum of the stomach is advisable; but if the neuromechanism is at fault, sectioning the vagal nerves is indicated. The authors studied patients with peptic ulcer in order to determine which of these two mechanisms was at fault, particularly in patients with duodenal ulcer. They found that virtually all patients with duodenal ulcer showed evidence of varying amounts of excessive stimulation of the cephalic mechanism. At times the increased sensitivity of the gastric secretory mechanism to histamine was so extravagant as to suggest that the antral function of the stomach was playing a more important role than the vagus. In such cases gastric resection was performed, but such clear-cut distinction was not common, and in most instances vagal section seemed indicated. Thus the results of the tests were less clear-cut than the authors had hoped. The 12-hour night secretion was greatly increased in almost all patients with duodenal ulcer. This has been the observation of others, and would suggest that in duodenal ulcer the cephalic mechanism is overactive. On the other hand, there is also an increase in the sensitivity to histamine in most patients with duodenal ulcer. In the majority of cases both mechanisms were about evenly involved, and in the end approximately two-thirds of these patients were subjected to subdiaphragmatic vagotomy with pyloroplasty or gastrojejunostomy and one-third to subtotal gastrectomy.

Northwest Medicine, Seattle

51:833-920 (Oct.) 1952

The Physician's Responsibility as Leader. L. A. Alesen.—p. 855.
Blood Lipid Correction in Arteriosclerosis and Its Hypotensive Effect. A. M. Nelson.—p. 860.
Early Treatment of Injuries to Flexor and Extensor Tendons of Hand. H. v. H. Thatcher.—p. 867.

Ohio State Medical Journal, Columbus

48:889-988 (Oct.) 1952

Newer Treatments of Intrinsic Asthma. S. W. Simon.—p. 913.
Some Observations on Roentgen Therapy of Bursitis and Peritendinitis Calcarea of the Shoulder. R. L Garber.—p. 918.
Management of Parotid Gland Tumors. A. G. James and R. Saleeby.—p. 920.
Postpartum Myocardosis. R. M. Woolford.—p. 924.

48:989-1084 (Nov.) 1952. **Partial Index**

Vascular Lesions in Diabetes Mellitus: I. Pathologic and Clinical Aspects of Atherosclerosis. J. I. Goodman.—p. 1013.
Success and Failure of the Portmann Operation. R. L. Flett.—p. 1019.
Spontaneous Rupture of Normal Esophagus. M. W. Selman, H. L. Hunter and F. J. Nemcik.—p. 1022.
Cataract Surgery for Casual Operator. G. L. King.—p. 1024.
Basic Principles of Psychosomatics. C. H. Campbell.—p. 1027.

Oklahoma State Medical Assn. J., Oklahoma City

45:343-370 (Oct.) 1952

Cardiovascular Disease as National Health Problem. T. P. Murdock.—p. 345.
Sweeney Diabetic Foundation Camp for Diabetic Children. J. S. Sweeney.—p. 348.
Survey or Changing Health Problems. K. T. Mosley.—p. 349.
Cardiac Control Program in Georgia. J. G. Barrow Jr.—p. 353.

Plastic & Reconstructive Surgery, Baltimore

10:215-294 (Oct.) 1952

*Subtotal Reconstruction of Thumb. J. W. Littler.—p. 215.
Simple Method of Reconstruction in Some Cases of Dish-Face Deformity. A. Ragnell.—p. 227.
Further Observations on Use of Autogenous Cartilage Graft in Arthroplasty of Temporomandibular Joint. J. J. Longacre and R. F. Gilby.—p. 238.
Studies on Survival of Skin Homografts: Preliminary Report. T. G. Blocker Jr. and C. D. Dukes.—p. 248.
Replacement of Mucous Membrane of Urinary Bladder with Thick-Split Grafts of Skin: Experimental Observations. J. W. Draper, R. B. Stark and M. W. Lau.—p. 252.
Use of Lyophilized Hyaluronidase in Cosmetic Surgery About the Face. H. B. Thale.—p. 260.
"Broomstick" Leg Deformities: Prosthetic Restorations and Research. A. M. Brown.—p. 264.
Fibromatosis in Children. B. Kapiloff and J. T. Prior.—p. 276.
Two Cases of Noma Sequelae Treated with Scalp Flaps. C. Borcbakan.—p. 283.

Subtotal Reconstruction of Thumb.—When a portion of the metacarpal with its intrinsic musculature remains after injury of the thumb, some added length with sensation is desirable. This can be gained in selected cases by the transposition of an adjacent digit, which often is involved in the injury and contributes only limited function to the intact portion of the hand. This paper illustrates the contribution of an adjacent digit to the formation of a very useful thumb. The transfer of a portion of an index finger to prolong a partially amputated thumb poses technical problems somewhat different than those encountered in a straightforward transposition of the index finger in total thumb loss. It is desirable to provide additional length with as little interference as possible to the remaining basal portion of the thumb. Several procedures are discussed on the basis of four case histories, which are illustrated by diagrams, roentgenograms, and photographs.

Psychiatric Quarterly, Utica, N. Y.

26:529-728 (Oct.) 1952. **Partial Index**

Psychosis and Bronchial Asthma. J. C. Sabbath and R. A. Luce Jr.—p. 562.
Patterns of Research in Mental Hygiene. B. Pasamanick.—p. 577.
Patient-Therapist Relationship in Multiple Psychotherapy. II. Its Advantages for Patient. R. Dreikurs, H. H. Mosak and B. H. Shulman.—p. 590.
On Tolerance to and Craving for Alcohol in Histamine-Treated Schizophrenics: Physiodynamic Interpretation of Observations on Histamine-Adrenocortico-Hormonal Equilibrations. R. R. Sackler, M. D. Sackler, C. Tui and others.—p. 597.
Semi-Responsible Individual. F. A. Mettler.—p. 608.
Some Recent Trends in Organized Psychiatry. D. Blain.—p. 626.
Effect of Service-Connection on Prognosis in Psychiatric War Veteran Patients. W. Brown.—p. 642.
Successful Treatment of Severe Chronic Anxiety Neurosis with Psychotherapy Followed by Electric Shock Treatments. S. M. Korson.—p. 651.

Southern Medical Journal, Birmingham, Ala.

45:1015-1118 (Nov.) 1952

Metal Hip Joint: New Self-Locking Vitallium Prosthesis. A. T. Moore. —p. 1015.
Differential Diagnosis of Neck Tumors. J. W. Hendrick.—p. 1019.
*Diagnosis and Treatment of Chronic Amebiasis. R. A. Radke.—p. 1027.
*Gastric Ulcer: Analysis of 221 Cases. W. W. Vaughan and R. J. Nichols. —p. 1035.
Ureteral Obstruction Secondary to Extra-Ureteral Infection. J. Hughes. —p. 1044.
Rational Application of Biostatic Drugs in Agranulocytosis. L. S. Saler. —p. 1050.
Cordotomy in Palliative Treatment of Paralysis Agitans. B. L. Truscott. —p. 1052.
Poliomyelitis in Early Infancy: Case Report. C. W. Phillips Jr. and J. D. Paschal.—p. 1054.
*Rheumatoid Spondylitis. A. H. Crenshaw and J. F. Hamilton.—p. 1055.
Clinical Use of ACTH and Cortisone in Treatment of Allergic Diseases. S. F. Hampton.—p. 1061.
Opportunities for Studying Responses of Human Allergic Cells in Tissue Culture. C. M. Pomerat.—p. 1067.
Use and Abuse of Ophthalmic Ointments. H. B. Dozier and P. W. Renken.—p. 1071.
Salicylate Intoxication from Cutaneous Absorption of Salicylic Acid: Review of Literature and Report of Case. C. J. Young.—p. 1075.
Appraisal of Hormone Therapy in Dermatology. A. H. Lancaster. —p. 1077.
Evaluation of Thyroid in Treatment of Sterility. G. L. Jarvis.—p. 1083.
Office Procedures in Anesthesia. J. W. Winter.—p. 1088.
Palliative Treatment of Prostatic Cancer. J. B. Glanton, R. J. Fitzpatrick, L. M. Orr and J. C. Hayward.—p. 1094.
Fractures of Face. J. A. Buchignani.—p. 1099.

Chronic Amebiasis.—The syndrome of chronic amebiasis is described as the intermittent occurrence of diarrhea and lower abdominal cramps in a tired, flatulent person with headache, joint aches, or allergic skin manifestations. Less frequently observed complaints are bloody stools, right upper quadrant pain radiating to the back, and severe rectal pain. Physical examination will usually reveal tenderness in one or both lower quadrants, and hepatomegaly is observed quite frequently. Lesions seen on sigmoidoscopic examination in more than 80% of the patients were superficial erosions ranging in size from 2 mm. to 1 cm. and more in diameter, reddish brown miliary abscesses, and cysts formed within the intestinal tissues rather than in the lumen of the bowel. When such a clinical picture is observed, the offending organism should be sought by direct smear, stained smear, and culture in specimens obtained by random stool after saline purge and by aspirations through the sigmoidoscope. The technique of sigmoidoscopic examination is discussed, and the fact that this is a painless intervention is stressed. An ideal treatment for amebiasis must (1) be suitable for outpatient treatment; (2) be completely nontoxic; (3) require not more than five days for completion; (4) be 100% effective; and (5) be relatively inexpensive. The fact that no presently available treatment is ideal by such criteria is stressed. Several treatment regimens that have been evaluated in the author's clinic are considered with respect to the five specifications mentioned above, and treatment with quinacrine (atabrine®) hydrochloride combined with carbarsone was found to be the most effective. This was employed in 650 patients during the past four years. Treatment reactions to this regimen were observed in an appreciable percentage of patients. They consisted of exacerbation of the symptoms of amebiasis on the fifth to eighth day of treatment, mental disturbances due to quinacrine hydrochloride, usually an enhancement of preexisting psychologic imbalance (toxic delirium and acute exacerbation of latent schizophrenia were observed), and exfoliative dermatitis, arsenic encephalopathy, and other reactions to carbarsone.

Gastric Ulcer.—A critical analysis is presented of 221 cases of gastric ulcer seen in 153 women and 68 men in a general hospital during a period of 15 years. Of these patients 208 had proved or suspected benign ulcers and 13 had verified malignant ulcers. The average age was 47 in the first group and 54 in the second. Twenty-two patients of the benign ulcer group and nine of the malignant group died. Of the remaining 190 patients, 176 had been followed up, and 166 of these returned for roentgen examination of the stomach and a clinical evaluation by a staff member who was not familiar with the current roentgen ray findings. It was found that none of the 13 malignant ulcers was situated on the greater curvature and that gastroscopy was of considerable help in differentiating benign and malignant ulcers as well as in determining the prognosis under a medical regime. Of the 208 patients in the benign ulcer group, 14 (6.7%) had multiple gastric ulcers, and of the 13 in the malignant ulcer group, 2 (15.4%) did. An associated duodenal ulcer was present in 43 (20.7%) patients with benign gastric ulcer and in 2 (15.4%) of the malignant group. Of 80 patients with gastric ulcer who submitted to surgical treatment, 49 (61.3%) obtained excellent results, while of 128 patients treated by medical management, results obtained in 49 (38.3%) were classified as excellent. The responsibility of the attending physician and of the roentgenologist for adequate follow-up roentgen ray studies is emphasized.

Rheumatoid Spondylitis.—In 151 patients with rheumatoid spondylitis, all degrees of involvement by the disease were observed. The patients were divided into four groups primarily on the basis of roentgenographic changes. Group 1 consisted of 23 patients with changes limited to the sacroiliac joints; group 2 of 33 patients with changes in the sacroiliac joints and moderate involvement of the spine as evidenced by moderate calcification of the longitudinal ligaments, or moderate changes in the apophyseal joints, or both; group 3 of 96 patients with changes in the sacroiliac joints and severe involvement of the spine as evidenced by pronounced calcification of the longitudinal ligaments, or pronounced changes in the apophyseal joints, or both; group 4 of 2 with no changes in the sacroiliac joints, but with involvement of the spine. As a result of their experience with these 151 patients, the authors state that early diagnosis in patients with rheumatoid spondylitis is important in the attempt to prevent severe disability. The importance of early sacroiliac joint changes is emphasized. Oblique views of the lumbar spine are necessary in most cases, in order to visualize early apophyseal joint changes. One should not wait for ligamentous calcification to appear before making a diagnosis for, even in the far advanced stages, it may not be present. An analysis of the initial symptoms in the authors' patients showed that 48 had onset of the disease in one or more peripheral joints, and rheumatoid spondylitis should be kept in mind when a diagnosis of early rheumatoid arthritis is made. Roentgen therapy combined with medical and orthopedic measures offers more chance for success than any other method known today. A follow-up for from 2.6 to 3.9 years of 33 patients belonging to the first three groups who had been treated by this regimen showed that 7 obtained excellent results, 11 good results, 12 fair results, and only 3 were therapeutic failures.

Texas Reports on Biology and Medicine, Galveston

10:481-758 (No. 3) 1952. **Partial Index**

Study of the Effect of Procaine Intravenously on Histamine and Allergic Phenomena. J. D. Archer.—p. 483.
*Effect of Fluoride on Tumor Growth. J. C. Finerty and J. D. Grace. —p. 501.
Infantile Diarrhea in Texas. A. E. Hansen, R. H. Gibbs, M. L. Beene and others.—p. 525.
Effect of Hypo- and Hyperthyroidism on Pituitary-Adrenal Response to Stress. M. Hess and J. C. Finerty.—p. 554.
Tumor Resistance Phenomena. J. B. Loefer, R. B. Mefferd Jr. and R. M. Nettleton Jr.—p. 598.
Tumor Resistance in Relation to Individual Metabolic Patterns. I. Alteration of Host Susceptibility to Tumor Grafts by Nutritional Means. J. B. Loefer and R. B. Mefferd Jr.—p. 614.
Tuberculous Meningitis. J. W. Middleton and A. N. Longfield.—p. 629.

Effect of Fluoride on Tumor Growth.—Fluorides are considered potent inhibitors of certain enzyme systems and have been shown to exert a protective action against the toxicity of arsenic, which is known to have carcinogenic properties. Arsenic trioxide poisoning has been prevented by the addition of potassium fluoride to drinking water. The experiments described in this paper were carried out to determine whether any effect upon the growth of a transplanted sarcoma is exerted by a high level of fluoride in the drinking water. Rats that had received implants of the Walker rat sarcoma 319 were given various amounts of potassium fluoride in their drinking water. There was neither inhibition nor stimulation of tumor growth under the influence of fluoride.

FOREIGN

Acta Dermato-Venereologica, Stockholm

32:441-478 (No. 6) 1952

Can Tuberculous Infection Be Acquired Through Injuries Sustained in Swimming-Pools? C. Brück.—p. 443.
*Water-Borne Tuberculous and Similar Infections of the Skin in Swimming Pools. S. Hellerström.—p. 449.
Some Investigations on Hypersensitiveness to Bichromate in Cement Workers. J. K. Engebrigtsen.—p. 462.

Water-Borne Tuberculous Skin Infections Acquired in Swimming Pools.—Bergsman and Vahlne in 1948 showed that tubercle bacilli were present in a water course up to 2,000 m. (2,300 yd.) from the outlet from tuberculosis sanatoriums. That water-borne tuberculous infection of the skin may follow the use of a public swimming pool was observed by Hellerström in 1938, when he observed a lesion on the bridge of the nose in a youth of 19 who had acquired the lesion on diving into a swimming pool. Characteristic lupus patches were observed in this lesion, and the Mantoux test, which a few weeks before had been negative, became positive. A similar case was observed by the author in 1942 and four additional cases between 1944 and 1949. Five of the patients acquired their lupus in the same swimming pool. When Hellerström reported his six cases of inoculation lupus vulgaris before the American Academy of Dermatology and Syphilology at Chicago in December, 1949, Cleveland's four cases of possible tuberculous skin infection acquired in a swimming pool that were observed between 1938 and 1948 in Vancouver, Canada, were called to his attention. After commenting on these cases, he cites a number of others reported in the literature in recent years, including the one described by Brück in this same issue of *Acta Dermato-Venereologica*. He emphasizes that clinically and bacteriologically the tuberculous infections of the skin acquired in swimming pools were largely of two types: inoculation lupus of the bridge of the nose and more or less noncharacteristic crusted lesions on elbows and knee. The latter type, in the opinion of investigators who studied the cases, was due to a Mycobacterium practically indistinguishable from a Koch's bacillus and possibly analogous to a Mycobacterium marinum observed in aquariums. The problem of tuberculous and similar infections of the skin acquired in swimming pools is complex and requires further study.

Angiología, Barcelona

4:215-268 (Sept.-Oct.) 1952. **Partial Index**

*Stenosing Femoral Arteriopathy in Hunter's Canal. E. C. Palma.—p. 215.
Ligation of Inferior Vena Cava in Last Months of Pregnancy for Recurrent Embolism. J. Valls-Serra.—p. 235.

Stenosing Femoral Arteriopathy.—The arterial disease described by the author is different from the various forms of obliterating arteritis. It develops in men who are engaged in physical work or in sports. The pure form occurs before the age of 40; the presenile form, between the ages of 40 and 60. The disease is of neither toxic nor infectious origin. It seems to be due to repeated trauma of the superficial femoral artery's wall against the structures of Hunter's canal, which in these patients is congenitally narrow. Trauma occurs during systole of the artery. The symptoms are spontaneous pain or tenderness over Hunter's canal and intermittent claudication in one or both legs. The dorsalis pedis, posterior tibial and, popliteal pulsations are diminished or absent. The oscillometric readings were diminished or absent below the lower third of the thigh. The disease is bilateral, but the symptoms predominate in the leg that is primarily involved. Since 1948 the author has observed 19 cases. Clinical examination, the results of arteriography, examination of the lesions during operation, and biopsy showed that the stenosing lesion starts at the lower third of the superficial femoral artery, with periarterial fibrosis and thickening of the intima of the artery. The lesions progressively involve the entire femoral artery and sometimes the popliteal artery, but other arteries and veins in the body are unaffected. The lesion progresses into fibrosclerosis and stenosis of the involved artery, fixation of the superficial femoral artery to Hunter's canal and of the popliteal artery to the fibrous tissues about the opening in the adductor magnus muscle, with late occurrence of local and peripheral thrombosis and consequent peripheral ulceration and gangrene. The treatment consists in sectioning the tendon of the adductor magnus muscle, opening Hunter's canal and the femoral sheath, and liberating the superficial femoral and popliteal arteries from the nets of fibrous tissues about them. The operation is completed in advanced cases with arteriectomy and lumbar sympathectomy. Good results from this treatment were obtained in six patients with the pure form of the disease and in 11 out of 13 patients with the presenile form of the disease. In patients with the pure form, marked improvement was obtained in four and moderate improvement in two. In patients with the presenile form of the disease, marked improvement was obtained in five, and moderate improvement was obtained in six. The good results have been maintained unchanged for from six months to 3½ years after the operation.

British Journal of Surgery, Bristol

40:97-192 (Sept.) 1952

Insulin Tumours of the Pancreas. J. Morley.—p. 97.
*Total Pancreatectomy. A. Gourevitch and A. G. W. Whitfield.—p. 104.
Surgical Management of Penetrating Posterior Wall Duodenal Ulcer. F. H. Bentley.—p. 107.
Some Observations on Function of Small Intestine After Gastrectomy. A. J. Glazebrook and R. B. Welbourn.—p. 111.
*Gastrectomy with Replacement: Preliminary Communication. F. A. Henley.—p. 118.
Thoracic Inlet Neurovascular Interference. C. Jones and D. R. Randall. —p. 128.
Submucous Fibroma of Ileum Causing Intussusception. M. T. Pheils. —p. 135.
Irreducible Intussusception in Infants. M. White and W. M. Dennison. —p. 137.
Malignant Change in Chronic Osteomyelitis. M. B. Devas.—p. 140.
Multiple Painful Glomus Tumors. T. Rowntree.—p. 142.
Benign Cystic Teratoma (Dermoid Cyst) of the Testicle. I. Muir.—p. 144.
Technique of Partial Gastrectomy. T. O'Neill.—p. 148.
Terebrant Rodent Ulcer with Widespread Blood-Borne Metastases. A. H. Hunt.—p. 151.
*Sjögren's Syndrome: General Disease. A. D. Morgan and R. W. Raven. —p. 154.

Total Pancreatectomy.—After listing data on 25 cases of total pancreatectomy collected from the literature, Gourevitch and Whitfield present the history of their own patient, who was alive and well 22 months after total pancreatectomy. Laparotomy was carried out through a paramedian incision on the right side. The pancreas was hard and knobby, and a malignant lesion was suspected, although no metastases were found. Histological examination of the pancreas revealed a papilloma near the outlet of Wirsung's duct. Behind the papilloma the main duct was dilated, and the whole pancreas showed almost complete atrophy of the acini with interstitial fibrosis. The islets of Langerhans had survived and appeared normal. The only healthy pancreatic tissue was a small zone adjacent to the duodenum, which presumably drained into Santorini's duct. The postoperative course was marred by recurrent attacks of ascending cholangitis, which were eventually controlled by cholecystenterostomy. The postoperative insulin requirement was about 50 units per day. This relatively small amount of insulin is in accord with the experience of previous writers, most of whom were able to attain adequate stabilization on a daily dose of 40 units or less.

Gastrectomy with Replacement.—There has been little fundamental change in gastric surgery since Billroth performed his first partial gastrectomy in 1881 and later devised the Billroth 2 operation, which was modified by Polya in 1911. There have been alterations in technique in both of these procedures, but the principle has been maintained. In the Billroth 1 procedure there is an end-to-end anastomosis between the stomach and the duodenum, while in the Billroth 2 or Polya operation the end of the stomach is implanted into a loop of jejunum. Both of these operations have disadvantages. Considering these shortcomings Henley has devised an operation in which part or all of the excised stomach is replaced by an isolated segment of jejunum, which is then anastomosed to the duodenal stump. This operation has been performed 35 times without mortality from Aug. 13, 1951, to March 1, 1952. There have been six complications in all, two necessitating further surgery and the remaining four responding to medical treatment. The technique of the operation is described. To determine the range of usefulness of the operation Henley has performed it for carcinoma of the

stomach in 2 cases; for gastric ulcer in 13; for resectable duodenal ulcer in 8; for nonresectable duodenal ulcer in 4; for perforation of peptic ulcer in 4; and as a remedial operation for postgastrectomy syndrome in 4. The immediate results suggest that preservation of the duodenum as an active component in digestion is desirable, and that the so-called postgastrectomy syndrome following the Billroth 2 operation is due to exclusion of the duodenum. When a segment of jejunum is substituted for the excised stomach, food is held in the gastric remnant and delivered slowly by jejunal peristalsis into the duodenum, so that the emptying time of the gastric remnant and graft approaches more closely to that of the normal stomach. In the Billroth 1 operation food may enter the duodenum hurriedly, with subsequent dilatation and a degree of ileus of the duodenum.

Sjögren's Syndrome as a General Disease.—Sjögren described in 1933 a syndrome characterized by dry eyes (keratoconjunctivitis sicca), dry mouth (xerostomia), recurrent parotid swellings, and polyarthritis. The ophthalmologist usually makes the diagnosis, because the distressing ocular symptoms cause the patient to seek his advice. This paper, however, is concerned with the nonocular aspects of the disease, which may precede the others by several years and may not be correctly diagnosed. Two patients are described whose first symptoms were nonocular. In each of these two patients the parotid gland was examined microscopically, and in one case the diagnosis was made on this basis. The condition is comparatively rare, Sjögren having estimated its incidence as 1 in 2,000 outpatients in an ophthalmological clinic. The cause has not been completely explained, but an endocrine deficiency in connection with the menopause has been suggested by some observers, whereas others have suggested avitaminosis, chronic infection, and neurotropic factors as possible etiological factors. Vitamin therapy has been abandoned, and although success with hormone therapy is claimed only in isolated instances, a trial of hormone treatment is considered justified. The keratoconjunctivitis sicca has been treated surgically by occluding the tear ducts and thereby conserving the tears. The nonocular manifestations are treated symptomatically.

British Medical Journal, London

2:791-838 (Oct. 11) 1952

Treatment of Kwashiorkor with Milk and Vegetable Proteins. R. F. A. Dean.—p. 791.
*Kwashiorkor. I. Nutritional Background, History, Distribution, and Incidence. H. C. Trowell and J. N. P. Davies.—p. 796.
*Id.: Clinical Picture, Pathology, and Differential Diagnosis. H. C. Trowell, J. N. P. Davies and R. F. A. Dean.—p. 798.
Late Prognosis of Subarachnoid Haemorrhage. J. N. Walton.—p. 802.
*Intra-Arterial Injections in Treatment of Peripheral Vascular Disease. J. W. L. Edwards, N. B. Jones, R. B. McConnell and others.—p. 808.
Blood Transfusions in Paraplegic Patients with Toxemia. J. J. Walsh.—p. 811.
Use of Fuchsonium Compound for Non-Specific Cervicitis and Vaginal Thrush. D. M. Hart and C. H. Brown.—p. 813.
Radical Duodenopancreatectomy for Papilloma of Pancreatic Duct. W. G. Hendry.—p. 815.
Banti's Disease in Two Brothers with Blood-Group Analysis of Parents. M. Hauge and J. Mosbech.—p. 816.

Kwashiorkor.—In two reports Trowell and associates discuss kwashiorkor, a nutritional disorder that is widespread throughout the tropical and subtropical parts of Africa, Asia, and America. It develops during the period of weaning, which in these areas often involves a sudden change to the adult diet, which generally contains little protein and fat and much carbohydrate and roughage. Most African infants grow well during the first five to six months of life, when the supply of breast milk is adequate for their needs. Somewhere between the 6th and the 12th months, however, growth ceases to be satisfactory; the skin becomes pale, and the hair brownish and soft. Respiratory tract infections are frequent, and at the same time the incidence of malaria rises steeply. In the second year of life the weight of these infants with kwashiorkor decreases still further below normal levels, and they are very little heavier or taller than they were at the age of 7 to 9 months. Their malnutrition is due to insufficiency of protein. Tropical infections such as hookworm disease and malaria complicate but do not cause kwashiorkor. The dietetic history and physique of the child should establish the diagnosis. The transition from the mild to the severe form of kwashiorkor is accompanied by diarrhea, which may be persistent or intermittent. Edema is a constant feature, in spite of which the children are underweight, and bone development may be retarded. A unique dermatosis appears as a late manifestation, which has been called "the crazy-pavement dermatosis." It begins with dusky patches that look as though the skin had been stained with a purple dye. The patches rapidly darken, and their edges deepen, giving the appearance of irregular paving. The similarity of the dermatosis of kwashiorkor to that of pellagra, gave rise to the term "infantile pellagra," which is still used by some authors. In kwashiorkor, however, the lesions are not restricted to areas exposed to sunlight. Anemia is seldom severe in kwashiorkor, but apathy and malaise are constant features. Pathological lesions include the disappearance of zymogen granules from the pancreatic acini and the accumulation of fat in the periphery of the hepatic lobule. Kwashiorkor must be differentiated from nutritional edema, hookworm disease, nephritis, celiac disease, and fibrocystic disease of the pancreas. If kwashiorkor reaches the severe stage, it is usually fatal.

Intra-Arterial Injections for Peripheral Vascular Disease.—Edwards and associates injected various vasodilator substances into the arteries of 84 patients with occlusive arterial disease, with the aim of improving exercise tolerance in intermittent claudication or limiting the development of ischemic necrosis. Patients with manifest coronary artery disease were excluded. Originally the authors employed the pressure drip method as described by Mufson in 1948, but more recently, except in the case of drugs which need considerable dilution, they found a needle and 20-ml. syringe to be adequate. A sharp-pointed, short-bevelled, needle, with syringe attached, is plunged direct into the femoral artery. The maneuver is more readily accomplished, particularly in the obese patient, by directing the needle against the blood stream. In the case of alcohol and histamine the drip method, taking approximately 30 minutes, was used, but a rapid injection of tolazoline (2-benzyliminazoline), acetylcholine, and papaverine by the syringe method appeared to have no disadvantages. Accuracy of arterial puncture is particularly important in the case of drugs such as acetylcholine, which have undesirable side-effects when introduced intravenously. The procedure is safe enough to be suitable for outpatient practice. Improvement in a large percentage of cases encouraged greater use of this method. A number of drugs besides those mentioned were tried, but were not as satisfactory. In cases of degenerative arterial disease the pathological process cannot be reversed, but treatment can be directed towards facilitating compensatory mechanisms by the use of vasodilator substances. Should these be permitted to act over the whole body, however, vasodilatation in the more normal vasculature may divert blood from the ischemic limb. Adequate concentration at the site of the lesion is more readily attained intra-arterially than by other routes, and this route has the additional advantage that side-effects are minimized.

Deutsche medizinische Wochenschrift, Stuttgart

77:1245-1276 (Oct. 10) 1952. Partial Index

Human Genetics; Recent Results and Knowledge. O. von Verschuer.—p. 1245.
Acute Dyspnea Threatening Life and Its Various Causes. H. Eickhoff.—p. 1248.
Toxoplasmosis of Eyes and Epidemic Hepatitis. H. Rieger.—p. 1250.
*Iron Deficiency in Frequent Blood Donors. D. Remy, H. Goldeck and E. Krüger.—p. 1253.
*Aerosol Therapy for Pulmonary Tuberculosis. H. Uhde.—p. 1259.

Iron Deficiency in Frequent Blood Donors.—Twenty men and 20 women who had frequently donated their blood to a hospital blood bank had shown normal values on routine control blood counts. The men had donated on an average a total amount of 11.26 liters of blood on 26 occasions in the course of nine years, and the women had donated a total amount of 9.22 liters on 27 occasions in the course of six years. Serum iron determinations were carried out in all these donors before they made an additional donation of their blood. Of the 40 donors, 15 had reduced values of serum iron; in 9 the serum values

were at the lowest normal limit and 16 had still normal values. Iron tolerance tests were performed on six donors who had slightly subnormal or normal values of serum iron; the absorption of iron was determined in these donors after an oral test dose of 204 mg. of a proprietary iron preparation. Results showed a strongly increased iron absorption. In the majority of the chronic blood donors, a masked iron deficiency was thus demonstrated by the reduced serum iron level and by the increased absorption of iron after the oral administration of test doses. Electrophoretic protein determinations in six donors with a particularly high number of blood donations did not reveal a significant protein deficiency. It seems nevertheless advisable to urge chronic blood donors to keep to a high protein diet. The authors' results suggest additional medicinal iron supply as an urgent prophylactic measure for all frequent blood donors. The interval between a blood donation of from 350 to 500 cc. and the succeeding donation should be two to three months.

Aerosol Therapy for Pulmonary Tuberculosis.—A large number of patients with pulmonary tuberculosis whose sputum had not become negative despite parenteral chemotherapy were subjected to aerosol therapy using a 5% amithiozone (conteben®) suspension (1 cc. of a watery colloidal solution corresponding to 0.05 gm. of amithiozone). To increase the concentration of the drug in the patient's blood, 5 units of a proprietary hyaluronidase preparation ("kinetin" and more recently called "kinaden") were added to the suspension; in addition 3 to 5 drops of 1% isopropylepinephrine ("aludrine") solution were added, to increase the effect of the drug. An atmospheric pressure aggregate providing 20 liters of air per minute was used and found sufficient, while a smaller apparatus providing only 8 to 10 liters of air per minute proved to be inadequate. The size of the single particle of the atomized drug varied between 1.5 and 5 μ, which is indispensable for reaching the finest bronchi and the alveoli. Results obtained with this technique were highly satisfactory since the sputum of 70% of the patients had become negative after 20 to 25 inhalations. Patients with small cavities in the upper lung fields and patients in whom ulcerous tuberculous bronchitis had been demonstrated to be the main focus responded best. Moderate response was obtained in patients with lesions in the middle lung fields and in those with so-called hilus cavities. Patients with a positive sputum after thoracoplasty responded least favorably, but the reduced number of bacilli in the sputum and the degeneration of the rods resulting from 30 to 40 inhalations suggested a favorable final result even in these patients. Aerosol therapy does not seem to be indicated in patients with large cavities.

Hiroshima Journal of Medical Sciences

1:1-104 (July) 1952. Partial Index

Function and Structure of Lymphatic System. Hiroshide Hatta.—p. 13.
*Findings on White Blood Cell Counts in Hiroshima Atomic Bomb Victims. Yasuyosi Nisimaru, Hiroshi Irisawa, Minoru Okita and others.—p. 25.
Effect of Various Bile Acids on Vitamin B_{12}. Taro Kazuno and Hideyuki Nakamura.—p. 39.
Established Pneumoperitoneum and a Few Associated Problems. Sunao Wada and Masato Yamamoto.—p. 85.

Leukocyte Counts in Hiroshima Atomic Bomb Victims.—Between Sept. 6 and Oct. 30, 1945, studies were made on the white blood counts of 650 persons exposed to the Hiroshima atomic bomb explosion of Aug. 6, 1945. In 50 patients no changes could be found in the leukocytic blood picture. In the others the decrease in the leukocyte count was about inversely proportional to the distance from the epicenter of the explosion. There was little difference in the hematological damage whether the person had been indoors or outdoors at the time of the explosion, except that in those who were inside concrete structures the damage seemed to be less severe. The fact that persons who had not sustained external injuries seemed to show greater changes in the blood picture and to recover more slowly than those who had been injured is believed to be due to the fact that the injured were given rest. Those who had considerable leukopenia also seemed to have both lymphopenia and granulopenia, but later a relative lymphocytosis appeared. Apparently the changes in the peripheral blood developed later than those in the bone marrow. After nine weeks all leukocyte changes seemed to have subsided. The authors feel that the changes in the leukocyte count are a reliable indicator of the intensity of the radiation damage. They also believe that rest is of great importance for patients who have been exposed to harmful irradiation. It should be continued for about two months, regardless of whether the person who has been exposed shows symptoms or not.

Indian Medical Gazette, Calcutta

87:335-384 (Aug.) 1952. Partial Index

Surgery of Certain Oesophageal Lesions. R. H. Betts.—p. 337.
*Simple and Reliable Treatment of Hyperemesis Gravidarum. M. Abdulla and D. K. Rohini.—p. 347.
Phrynoderma and Some Associated Changes in Blood Lipids. K. Rajagopal and S. R. Chowdhury.—p. 350.
Polyarthritis and Hypertrophic Pulmonary Osteoarthropathy in Case of Pulmonary Neoplasm. S. P. Basu.—p. 356.

Simple Treatment of Hyperemesis Gravidarum.—The treatment recommended by Abdulla and Rohini for hyperemesis gravidarum consists of administering intravenously 10 to 15 cc. of a 20% calcium gluconate solution on three successive days. The injection is given slowly (over about 10 to 15 minutes) so that the patient does not feel the warmth and nausea that usually accompany rapid injection. The authors have employed this treatment successfully for about 15 years. Some delay in recovery occasionally was observed in patients with extreme dehydration, toxemia, and gross pathological changes, but with suitable and systematic treatment the pregnancies continued to fullterm. The histories of four patients are presented who responded to this treatment recently. With the injection of calcium, no hospitalization and dieting are necessary, and no complications have been observed.

Lancet, London

2:691-740 (Oct. 11) 1952

P.P.S. Pneuma, Psyche, and Soma. G. Day.—p. 691.
Prolongation of Action of Hypotensive Drugs: Use of Polyvinylpyrrolidone and Dextrans to Lengthen Effects of Hexamethonium and Hexamethylene Bis-Ethyldimethylammonium. F. H. Smirk.—p. 695.
Venous Velocity in Bedridden Medical Patients. H. P. Wright, S. B. Osborn and M. Hayden.—p. 699.
Conservative Treatment of Fractures of Shaft of Radius and Ulna in Adults. H. Bolton and A. G. Quinlan.—p. 700.
Cyclopropane Anaesthesia for Dental Extraction and Other Surgery in Outpatients: Review of 1000 Cases. J. G. Bourne.—p. 705.
Phlebothrombosis and Nervous Stress. S. B. Stoker.—p. 709.
Human Ectopic Fascioliasis. B. N. Catchpole and D. Snow.—p. 711.
Haemophilia-Like Syndrome from Anticoagulants Affecting Production of Thromboplastin. I. S. Collins and D. G. Ferriman.—p. 712.
Carotenaemia. R. M. S. McConaghey.—p. 714.

2:741-788 (Oct. 18) 1952

Specialisation, Stratification, and Research. H. Himsworth.—p. 741.
Inflammation and Its Control: Biochemical Approach. G. Ungar.—p. 742.
Emergency Obstetrical Service: Review of 489 Cases in Manchester Area. C. J. Dewhurst.—p. 746.
*Surgical Treatment of Malignant Rectal Polyps. H. E. Lockhart-Mummery and C. E. Dukes.—p. 751.
Printers' Asthma. P. B. S. Fowler.—p. 755.
Effect of Interrupted Courses of Chloramphenicol on Relapse-Rate in Typhoid Fever. A. T. John and V. S. Vinayagam.—p. 757.
Trendelenburg Position. J. Howkins.—p. 759.

Surgical Treatment of Malignant Rectal Polyps.—Epithelial tumors of the mucosa of the large bowel are frequent precursors of cancer. The majority of such tumors can be removed through a sigmoidoscope, but for tumors higher in the colon, laparotomy and colotomy are used. All these tumors should be examined microscopically for malignancy. Of about 2,500 rectal cancers treated surgically at the hospital with which the authors are connected, 47 were excised locally but no lymph nodes were removed. Some of the tumors were pedunculated polyps; others were small semipedunculated villous tumors; and others were small nodular tumors. They were solitary, arising from the mucosa of the rectum. Most of them were clinically benign tumors, malignancy being discovered on microscopic examination. During the period under review 18 other similar tumors were treated by more radical measures, e. g., combined excision, perineal excision, or restorative resection with removal of the

lymph nodes. The results obtained in these 18 cases are compared with those obtained in the 47 cases of local excision. These latter are classified according to the degree of malignancy found in the rectal polyp. Of the 17 who had "local" carcinoma (limited to the mucosa), 1 died of heart disease and the other 16 are alive and have no sign of recurrence, although in all but 2 more than three years have elapsed since the operation. Of the 30 patients with invasive carcinoma, 7 had low, 20 average, and 3 high grade malignancy. In the seven with low grade malignancy there were also no recurrences. The invasive tumors of average grade of malignancy pose the most difficult problem. In this series 9 out of 20 recurred, and in four of these lymphatic metastasis was also observed. Recurrence took place in all of the three patients with high grade malignancy. These unsatisfactory results from local excision suggest that the greatest safety is provided by immediate radical surgery. Excision of the rectum should be advised if there is microscopic evidence of spread into the bowel wall or if the local removal has left only a small and inadequate margin of normal tissue. In cases in which the malignancy is still confined to the pedunculated tumor, it is probably safe to defer radical surgery if the patient can be reexamined frequently. Thus when invasive carcinoma is found in a rectal polyp, decision as to the form of treatment must depend chiefly on the histological grade of malignancy and the presence or absence of a free margin.

Lyon Chirurgical, Lyon

47:769-896 (Oct.) 1952. **Partial Index**

Enteroplastic Enlargement of Retracted Tuberculous Bladder (12 Cases). J. Cibert, F. Rolland, L. Durand and G. Brandsma.—p. 769.
Present Tendencies in Surgical Treatment of Cancer of Rectum. P. Chalnot and J. Grosdidier.—p. 787.
Esophagobronchial Fistulas with Traction Esophageal Diverticulum in Adult. J. Jaubert de Beaujeu.—p. 796.
*Anticoagulant Medication in Prevention and Treatment of Postoperative Venous Accidents. J. Favre-Gilly, S. Ithier, R. Blanc and others. —p. 825.

Anticoagulant Medication and Postoperative Venous Accidents.—Truly effective anticoagulant medications were not available until the discovery of heparin, which acts by preventing the thrombin-fibrinogen reaction, and bishydroxycoumarin (dicoumarol®) which impedes the synthesis of prothrombin by the liver. Treatment is usually combined because prompt action is needed. Heparin is given intravenously at the outset in doses of 50 mg. every three or four hours or 100 mg. every six or eight hours (total daily dose, from 300 to 400 mg.). The clotting time should be constantly watched and should not exceed 20 minutes immediately before the next injection; if it does, the doses must be reduced or given at greater intervals. The transition from heparin to bishydroxycoumarin must be made cautiously because the additive effect of the two anticoagulants may result in hemorrhage. Ethyl biscoumacetate (tromexan®), which seems to be more rapid in action and less dangerous than bishydroxycoumarin, is effective from the 12th hour on and is most effective at about the 24th hour; consequently, administration of heparin should be discontinued as soon as ethylbiscoumacetate has been given for from 24 to 36 hours. Dosage consists of two 300 mg. tablets daily for two or three days; subsequent doses are determined by the prothrombin rate, which should be kept between 15 and 30%. A rate below 10% shows a hemorrhagic risk and indicates that the dosage should be reduced. Postoperative thromboses frequently follow gynecological procedures; 40 such incidents occurred in this series of 100 patients. Thromboses were also frequent in cases of fracture or bone operations necessitating immobilization. Clinical symptoms are better indicators of impending thromboembolism than laboratory tests; if unexplained variations in temperature, hematomas, indwelling trocars, and early pulmonary or urinary complications in these patients had been taken into account, thromboembolism might have been predicted in 76% of the cases, and if in addition previous venous disease and obesity had been noted 90% of the cases could have been foreseen. The preventive value of postoperative anticoagulant treatment has been fully established: whether it should be given in all cases or only when there is evident danger of thrombosis must be decided by the surgeon. Curative anticoagulant treatment should be instituted as soon as possible, not only for frank thromboses, the duration of which it shortens, but also for pulmonary embolisms, in which it prevents the formation of secondary thromboses. There were no deaths from pulmonary embolism in this series. Hemorrhage is the most serious accident; it occurred in 10 cases, being benign in 8, severe in 1, and fatal in 1. Hemorrhages caused by bishydroxycoumarin are more dangerous than those caused by heparin because they are more persistent; heparin also possesses the advantage of having an antidote, protamine sulphate, which had an immediate effect in one case when injected intravenously (5 cc. of a 1% solution). Blood transfusions were the only remedy effective against hemorrhages induced by bishydroxycoumarin.

Minerva Medica, Turin

43:385-412 (Sept. 13) 1952. **Partial Index**

*Clinical Significance of Behavior of Koch's Bacillus Toward Isoniazid: Resistance and "Dependency." M. Reale, A. Garaventa and M. Ghione. —p. 396.
*Visammin in Treatment of Bronchial Asthma. A. Merli and R. Mariani. —p. 400.

Reaction of Mycobacterium Tuberculosis to Isoniazid.—A study was made in 22 patients with cavitary tuberculosis during treatment with isoniazid to test the sensitivity of the bacteria to the drug. Resistance of various degrees occurred early and progressively. In one patient after seven days of treatment the minimum concentration that inhibited the growth of the strain was 0.05 μg per cubic centimeter; after 14 days it was 5 μg per cubic centimeter. The onset of the resistance was revealed in 13 patients by a relapse in the clinical course of the disease, with cough, increased sputum, anorexia, and elevated temperature. But some patients in whom improvement continued had degrees of resistance like those found in patients with relapses. Isoniazid resistance developed in all patients whether the improvement was temporary or lasting when treatment with a daily dose of 4 mg. per kilogram of body weight was prolonged. A comparative study revealed that resistance to streptomycin develops in 80% of patients after an average treatment period of six months; resistance to *p*-aminosalicylic acid is less pronounced and appears in only 50% of the patients; and resistance to isoniazid develops in 100% of patients after a much shorter period. Dependency of the bacteria on the drug was observed in one patient in whom therapy at first brought about a clinical improvement though the roentgenograms did not change. After two months she had a relapse and a few days later sputum cultures revealed that in the medium containing 0.5 μg to 1 μg of isoniazid per cubic centimeter the bacteria developed much better than in the control culture. Concentrations as high as 50 μg per cubic centimeter did not inhibit growth. Two successive examinations at one month interval each revealed the same results. The exact biological explanation of these phenomena with an evaluation of their diagnostic and therapeutic significance is not yet available.

Visammin in Bronchial Asthma.—According to Merli and Mariani, visammin has a strong antispasmodic action that stops asthmatic attacks, relaxes bronchial muscles, increases the vital capacity of the patient, diminishes or neutralizes all the hypoxemic phenomena that are associated with the attacks, and dilates the coronary arteries. These effects are always proportional to the dose administered. This should be massive at the beginning of therapy and then gradually decreased as a maintenance dose. The authors gave visammin orally and rectally to 19 hospitalized patients, of whom 6 had bronchial asthma and 13 chronic asthmatic bronchitis. Some of these patients also had heart disturbances. The daily dose was 300 mg. for one patient, 200 mg. for five, and from 100 to 150 mg. for the others. After the massive initial dose had stopped the asthmatic attacks quickly but temporarily, an average daily dose of 100 mg. and later 50 mg. was given. The drug was well tolerated by all patients, and results were satisfactory in 13 patients, good in 5, and poor in 1. Asthmatic attacks present at the beginning of treatment were relieved in a few minutes, and thereafter they were less frequent and less intense. Relapses were avoided by prolonging the administration of the drug.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

96:2397-2460 (Sept. 27) 1952. **Partial Index**

Poliomyelitis and Infection with Coxsackie Virus. J. D. Verlinde and H. A. E. van Tongeren.—p. 2404.
*Heparin in Treatment of Acute Polyarthritis. C. Mendes de Leon. —p. 2417.

Heparin in Treatment of Acute Polyarthritis.—Polyarthritis is widely regarded as an allergic disorder. The time interval of about two weeks between the primary infections (usually tonsillitis), the sporadic involvement of joints, the lack of bacteremia, and the reduction of the complement titer in the blood serum are factors that indicate allergy. Mendes de Leon reviews the literature on the allergic nature of polyarthritis, and after pointing out that some investigators used heparin intravenously with good success in the treatment of acute polyarthritis, he describes the histories of five patients whom he treated with heparin. He gained the impression that heparin is effective in acute polyarthritis, particularly in refractory cases that are no longer or only inadequately responsive to salicylates or aminopyrine. It is assumed that the effect of heparin is due to the antihyaluronidase action.

Nordisk Medicin, Stockholm

48:1287-1318 (Sept. 19) 1952. **Partial Index**

Problem of Re-Expansion After Thoracotomy in Pulmonary Tuberculosis. J. Holst.—p. 1288.
"Roof Thoracoplasty" in Pulmonary Tuberculosis. Preliminary Results. P. Vaksvik.—p. 1294.
Value of Streptomycin and *para*-Aminosalicylic Acid in Non-Cavernous Pulmonary Tuberculosis of Limited Extent. E. Strandgaard.—p. 1296.
para-Aminosalicylic Acid Intravenously After Operations for Pulmonary Tuberculosis. J. Iversen.—p. 1298.
Dysthyreosis and *para*-Aminosalicylic Acid. N. Riska.—p. 1300.
*Side-Effects of Isoniazid. C. A. Adamson.—p. 1302.
Bronchial Adenoma with Total Destruction of Lung. I. Källqvist. —p. 1306.
Corticotropin and Cortisone in Heerfordt's Syndrome. O. Kofod.—p. 1308.

Side-Effects of Isoniazid.—Nineteen patients with cavitary pulmonary tuberculosis and one patient with bilateral pulmonary changes, unilateral pneumothorax, and pleuritis were treated for about a month with isoniazid in doses of from 3 to 8 mg. per kilogram of body weight. Rapid subjective improvement occurred in all cases. In about half the cases headache set in soon after start of treatment or on increase of dosage, but usually disappeared after a week. In some cases there was fatigue and irritation of the eyes. Renal, hepatic, and cardiac functions were not affected. Transient, unexplained reduction in Quincke's index was noted. No tendency to anemia was seen. In one case an apparently analgesic effect on joint symptoms was incidentally observed.

Praxis, Bern

41:866-888 (Oct. 2) 1952

New Central Analgesics. W. Wilbrandt.—p. 866.
*Treatment of Chronic Alcoholism with Apomorphine; Study of 500 Cases. H. Feldmann.—p. 871.
Problem of Toxoplasmosis in Adults; Report of Case. W. Jost.—p. 874.
Iodochlorhydroxyquin (Vioform®) in Dermatological Practice. A. Steppert.—p. 875.

Apomorphine in Chronic Alcoholism.—Apomorphine was used in the treatment of 436 men and 64 women with chronic alcoholism between February, 1947, and October, 1950. The patients were hospitalized and placed in an isolated room where they remained without food and water for the entire duration of the treatment. Treatment was started with administration of one or two glasses of the patient's preferred alcoholic beverage, followed by the subcutaneous injection of 6 mg. of apomorphine, causing nausea and vomiting within three to seven minutes. Two to four hours later the patient was given again a glass of his habitual beverage followed by a second injection of 6 mg. of apomorphine. Again two hours later a third injection of 6 mg. of the drug was given if the patient continued to drink, but the dose of the third injection was reduced to 5 mg. if the patient drank little or nothing. Injections of 5 and later of 4 mg. of the drug were continued every two to four hours, day and night, as long as the patient continued to drink. When aversion to one kind of alcohol, such as wine, occurred, the patient was offered beer or brandy, until he could no longer take any kind of alcohol. This procedure was discontinued only when vomiting or aversion was produced immediately by merely bringing the glass with alcohol near the patient. During the last eight hours of treatment injections of 4 mg. then 3 mg. and finally 2 mg. of the drug were given every hour. At the end of the treatment the patient was given 10 units of insulin. In 183 patients administration of apomorphine was combined with individual or group psychotherapy in the course of which the types and causes of chronic alcoholism, the purpose of the treatment, and the absolute necessity of total abstinence were explained. From the third to the fourth day of the treatment onward the pronounced effects of the treatment were clearly manifested as follows: the patient became quiet, the tremor of the hands and of the tongue, anxiety, irritability, psychomotor hyperexcitability disappeared, and the patient thus became more responsive to psychotherapy. Of the 500 alcoholics, 400 were given one course of treatment, 71 were given two courses, and 29 received three or more courses. All patients were followed for at least 17 months. Satisfactory results of treatment were obtained in 231 (46.2%) of the 500 patients, with complete and definite cure in 155 (31%) and social rehabilitation in 76 (15.2%). Recurrences were observed in 199 patients (39.8%), while 70 (14%) were lost to observation. Most of the relapses occurred between the 1st and 12th month of treatment, so that after an interval of more than one year without recurrence the patients may be considered cured. Apparently the same good results were obtained whether or not administration of apomorphine was combined with psychotherapy. But it is self-evident that by combining apomorphine therapy with social readaptation and suppression of psychological conflicts on which the alcoholism may frequently be based, the chances of recovery may be considerably increased. Social readaptation with the aid of groups of cured alcoholics of the type of "Alcoholics Anonymous," or of an antialcoholic dispensary is considered very useful. Treatment with apomorphine seems to have advantages over other types of drug therapy.

Presse Médicale, Paris

60:1355-1374 (Oct. 11) 1952. **Partial Index**

Addison's Disease Caused by Cortical Retraction. L. de Gennes, H. Bricaire and A. Buge.—p. 1355.
Attempt at Early Appreciation of the Prognosis of Esophageal Epitheliomas. G. Brulé, R. Gérard-Marchant and J. R. Schlumberger. —p. 1357.
*New Facts About Malignant Post-Molar Chorioepithelioma (Malignant Heterotrophoblastoma Following Pregnancy). H. Hinglais and M. Hinglais.—p. 1359.
Study of Nutrition of Greek People from 1941-1945. G. Tsangridis and C.-D. Véziris.—p. 1361.

Malignant Postmolar Chorioepithelioma.—The authors believe that the term homotrophoblastoma should be used for the primary or teratoid form of chorioepithelioma (homogenetic with the host), and that the postgravidic form (heterogenetic with the host) should be designated as heterotrophoblastoma. Secretion of prolan B affords a direct measurable proof of the presence and activity of the trophoblast; consequently, the concentrations of prolan B (serum or urinary) should fall to zero soon after an early hysterectomy if they are produced solely by the primary uterine focus, but not if metastases persist after the intervention. The concentrations of prolan B before and after hysterectomy were studied in 16 patients with postmolar chorioepithelioma subjected to early operation on the basis of biological data. The patients included in this series were clinically and biologically cured as shown by the finding of less than 5 or 3 rabbit units of prolan B per liter of urine after a period of at least two months, and by recent information in all cases. This study demonstrated the following facts: 1. Malignant postmolar chorioepithelioma does not develop in two stages but is apparently always generalized by immediate metastasis. 2. The efficacy of early hysterectomy does not depend on the eradication of a still-localized focus but on the rapid suppression of the principal nucleus from which the metastatic colonies are constantly renewed and multiplied. 3. Spontaneous cure of the metastases after a sufficiently early suppression of the primary focus is the rule up to a certain stage in their development, whatever their

localization and whether they are clinically apparent or, as more often happens, occult. 4. The benign or malignant development of the metastases depends on the relation between their mass and the variable activity of the natural organic defenses arrayed against them, and all the clinical forms, whether occult or apparent, of the primary phase of postgravidic trophoblastic cancerosis can be explained by this mechanism. 5. A thorough revision of the presently accepted concept of malignancy in this form of cancer is needed. Interesting hypothetical analogies are also suggested by the new facts in connection with the preclinical phase of malignant disease in general.

60:1375-1394 (Oct. 15) 1952. **Partial Index**

Nature of Trophic Disturbances and Probable Effect on Function of Pathological Tissue. R. Leriche.—p. 1375.
Remarks on Physiopathology of Acute Pulmonary Edema. Lian and Porto.—p. 1377.
*Should Gastroenterostomy Be Revived in Treatment of Certain Duodenal Ulcers? G. Gordet.—p. 1378.

Should Gastroenterostomy be Revived in Treatment of Duodenal Ulcers?—Comparatively frequent reports of peptic ulcer following gastroenterostomy in the prewar period led to its abandonment in favor of gastrectomy. No distinction was made in the statistics between cases in which peptic ulcer followed gastroenterostomy for gastric ulcer and those in which it followed gastroenterostomy for duodenal ulcer; if it had, the incidence in the latter cases would have been seen to be relatively small. Other complications were less frequent and did not influence the abandonment of the operation. Nutritional and metabolic disturbances, avitaminosis, and blood disorders never ensued, and while intestinal sequelae were sometimes noted, they were also seen after gastrectomy. The arguments advanced against gastroenterostomy were thus not based on valid information. Gastrectomy of the Finsterer type, which replaced it in almost all cases, has not done all that was expected of it. It has not eliminated jejunal peptic ulcer, for which it was especially advocated, and it has created a whole new series of problems, causing disturbances of a general, nutritional, and humoral character that cannot be foreseen and were previously unknown. These disturbances are sometimes severe, and even when they are slight and inapparent, they may open the way to pulmonary tuberculosis, which is hard to treat and has an unfavorable prognosis when it affects those in middle age. A better understanding of these postgastrectomy complications suggests the advisability of reviving gastroenterostomy, either alone or combined with Dragstedt's operation, in certain selected patients, such as those with ulcers distal to the duodenal bulb, ineradicable bulbar ulcers that would require gastrectomy for exclusion, and some scarring ulcers in which the disturbances are due more to partial stenosis than to the ulcer itself. Gastroenterostomy should also be used routinely for patients in whom gastrectomy is contraindicated by their age, general condition, or the existence of concurrent disease such as diabetes or tuberculosis in which it would be certain to aggravate the nutritional difficulties.

Rivista di Clinica Pediatrica, Florence

50:509-584 (Aug.) 1952. **Partial Index**

Atresia of Esophagus with Tracheo-Esophageal Fistula. R. Paolucci di V. and G. Bendandi.—p. 509.
*Clinical Study of 60 Cases of "Superimposed Meningitis" During Treatment of Tuberculous Meningitis. M. Giusti and L. Barilli.—p. 529.

"Superimposed" Meningitis During Therapy of Tuberculous Meningitis.—"Superimposed" purulent meningitis may occur during treatment of tuberculous meningitis with streptomycin. When this happens, the clear fluid becomes purulent. The bacteria responsible for this complication are in most cases gram-positive intra and extracellular diplococci that grow readily on blood agar. In other cases streptococci, staphylococci, or hemophili are found. Since this complication occurs months after the beginning of therapy for tuberculous meningitis and never during the early period, it is suggested that the penetration of these exogenous or endogenous bacteria into the meninges is at first prevented by streptomycin. Prolonged contact with the drug seems to enhance the pathogenic activity of the organisms and bacterial meningitis arises, especially if trauma, hemorrhage, food poisoning, or climate are contributing factors. The clinical picture is that of acute purulent meningitis, with elevated temperature, severe pain in the occipitocervical region, vomiting, localized or generalized convulsions, confusion, and coma. The prognosis is based on the promptness of diagnosis and therapy. The authors report on their experience in patients with this complication during the last four years. In 1948 they found it in 11 of 111 patients with tuberculous meningitis, and 3 died. The following year it occurred in 15 of 135 patients, and 6 died. In 1950 it was found in 16 of 148 patients, and 3 died; and up to the beginning of October, 1951, it was reported in 14 of 128 patients, and 2 died. In therapy penicillin combined with sulfonamides gave good results; chloramphenicol (chloromycetin®) gave fair results. Aureomycin seemed to be the antibiotic of choice; large doses were given intravenously with good results. Oxytetracycline ("terramycin") was tried in two patients in whom the complication was caused by Hemophilus organisms; they recovered and have not had relapses. Prophylaxis with polyvalent antibacterial vaccines is suggested during antibiotic therapy of tuberculous meningitis.

Schweizerische medizinische Wochenschrift, Basel

82:1009-1048 (Oct. 4) 1952. **Partial Index**

New Protector Against X-ray Exposure. Z. M. Bacq and A. Herve.—p. 1018.
Comparative Action of Cortisone, of Desoxycorticosterone and Promethazine on Resistance of Adrenalectomized Animals to X-Rays. B. N. Halpern, A. Cuendet and J.-P. May.—p. 1020.
Avitaminoses in Switzerland Considered from Point of View of a Laboratory for Vitamin Dosage. S. Bisaz.—p. 1025.
Clinical Phosphate Tolerance Test to Ascertain Calcium Regulating Capacity. E. Freudenberg and T. Ochsé.—p. 1027.
*Evaluation of Psychosomatic Medicine. W. H. von Wyss.—p. 1035.
*Psychophysical Correlations: Criticism of So-Called Psychosomatic Medicine. F. Georgi.—p. 1037.

Psychosomatic Medicine.—The observation that certain reversible disorders can be influenced and cured by psychotherapeutic as well as somatic methods is as old as the history of medicine. The only new feature of present day psychosomatic medicine is the tendency to relate certain functional disorders such as gastric and duodenal ulcers, colitis, asthma, or hypertension to psychological attitudes, particularly to conflict situations, and the tendency to dogmatize about the role of the psyche in all diseases. This attitude is criticized. Gastroduodenal ulcer, for instance, is completely unpredictable as regards etiology as well as course, and the emotional factor is only one of several contributory causes. It is admitted that removal of emotional tension may be helpful in certain forms of unstable hypertension, but it is questionable whether mental relaxation will be helpful in fixed hypertension. It is admitted that emotional tensions may influence the psyche and in turn become manifest in functional crises. The relationships of the psyche and emotions to the heart, respiration, and nutrition are briefly discussed. It is also pointed out that greater refinement in the intellectual and emotional life are associated with increased vulnerability and intensification of spiritual suffering. How this may become manifest in the acceptance of suffering and disease is illustrated on the basis of case histories.

Criticism of Psychosomatic Medicine.—The author does not object to efforts to try to influence bodily disturbances by psychotherapeutic as well as somatic measures, provided the one or the other method is not preferred or neglected merely for the sake of a theory. So-called psychosomatic medicine, particularly in its most extreme form, although it stresses the relationship between body and psyche, relies for treatment exclusively on psychotherapeutic methods. Furthermore, it claims to establish a new era in medicine, although the concept of psychosomatic medicine is not entirely clear as yet. A recent publication presented six different definitions, not including the Russian concept of reflexogenic psychosomatic medicine. The present emphasis on the psyche represents a reaction against the concept of medicine that became dominant toward the end of the 19th

century, and which was oriented toward the natural sciences, often neglecting psychological factors and placing emphasis only on the diseased organ. The author feels that if the proponents of psychosomatic medicine would be satisfied with directing their efforts against this onesidedness and if they would emphasize the unity of body and psyche and the importance of psychotherapeutic measures in apparently purely physical disorders, they would be doing a great service to medicine, but to go to the other extreme, and to attempt to trace all disease processes to psychological factors and rely exclusively on psychotherapeutic methods is deplorable and should be resisted. The author demonstrates on the basis of case histories that in certain conditions purely physical treatment, such as supporting treatment of the liver to enhance the detoxicating action of that organ, is essential before the patient even becomes amenable to psychotherapeutic measures.

82:1049-1072 (Oct. 11) 1952. **Partial Index**

So-Called Pleural Induration and Treatment of Chronic Pleuritis. A. Brunner.—p. 1049.
*Miliary Tuberculosis in Patients with Cushing's Syndrome. C. Hedinger. —p. 1053.
Problem of Cancer. H. Nicolaus.—p. 1055.
New Antigen for Serum Diagnosis of Cancer. H. Hecht.—p. 1058.
Stenosis of Duodenum Due to Annular Pancreas. T. Johner.—p. 1060.

Miliary Tuberculosis in Patients with Cushing's Syndrome.—A 29-year-old man with Cushing's syndrome had moon face, mild exophthalmos, obesity of the trunk, kyphosis, moist skin with acne, and purplish striae in the abdominal region. Death occurred within four and a half months after the first appearance of external signs of the disease. Necropsy revealed pronounced hyperplasia of the adrenal cortex and Crooke's changes in the anterior lobe of the pituitary. These observations strongly suggested an endogenously conditioned hyperfunction of the anterior pituitary and adrenal cortex system similar to that which may be artificially induced by prolonged treatment with large doses of corticotropin (ACTH) or cortisone. In addition to the changes in the pituitary and adrenal cortex, microscopic examinations of the respiratory tract revealed reactivation of an old primary pulmonary tuberculous complex, with extensively calcified and ossified hilus lymph nodes; there was involvement of the tracheobronchial and mediastinal lymph nodes and recent miliary dissemination of foci in the lungs, liver, spleen, kidneys, adrenals, and bone marrow. The temperature of the patient was about 98.6 F (37 C) except for the last eight days of his life, during which it rose to 104 F (40 C). In view of the rapid course of the patient's disease, Cushing's syndrome was apparently the precipitating factor of the miliary tuberculosis. The occurrence of tuberculous complications during treatment with corticotropin or cortisone, which already had been observed in several cases, must be taken into account because of the fact that a condition similar to that of endogenous Cushing's syndrome may be elicited by massive treatment with these drugs.

Semaine des Hôpitaux de Paris

28:3049-3090 (Oct. 14) 1952. **Partial Index**

*The Spleen in Besnier-Boeck-Schaumann's Disease. B. Duperrat and J. Vautier.—p. 3049.
Acquired Symmetric Telangiectasia of Limbs. Duperrat and Koff. —p. 3052.
Problem of Skin Homografting. F. Caby.—p. 3056.
Present State of Treatment of Leprosy. A. Basset.—p. 3064.

The Spleen in Sarcoidosis.—As a result of their review of the literature the authors state that involvement of the spleen occurs frequently in sarcoidosis. It may be latent in some cases, requiring puncture biopsy for its detection, or it may be manifested by a slight increase in the size of the spleen. In some cases splenomegaly is the only clinical sign of sarcoidosis, and diagnosis may be established only by microscopic examination of the specimen removed on surgical intervention. In all cases of this type, microscopic examination showed an infinite number of large epitheloid cells of typical sarcoid character that had completely replaced the tissue of the spleen. Nearly always some large epitheloid cells were also observed in the lymph nodes of the hilus of the spleen and in the liver.

South African Medical Journal, Cape Town

26:773-792 (Sept. 27) 1952. **Partial Index**

*Spinal Osteotomy. A. J. Helfet.—p. 773.
ACTH and Splenectomy in Idiopathic Acquired Haemolytic Anaemia: Report of Case in Bantu Child. N. Feldman and H. C. Falcke.—p. 778.
Case of Carotid Body Tumour. B. Goldstone.—p. 780.
Management of Brow Presentation. L. J. Abramowitz.—p. 782.

Spinal Osteotomy.—In the spinal osteotomy described by Smith-Petersen seven years ago, correction of the flexion deformity of the spine is obtained after wedge osteotomy of laminae and pedicles down to the intervertebral foramina. Whereas Briggs and his colleagues described a variation of the Smith-Petersen technique, Law of the London hospital advocates the original operation. Briggs uses a metal plate to fix the spine after operation, but Law finds that sound fusion is obtained by roughening the adjacent laminar surfaces and by dicing the removed spinous processes and using them as bone chips. He holds the back in a plaster jacket until there is sound union and follows this with a spinal brace until the long muscles have recovered power. Helfet here describes the case of a man, aged 35, with ankylosing spondylitis of 13 years duration. He carried his head almost at a right angle to his thighs. The innovation in the spinal osteotomy performed on this man was that a light malleable brace was applied instead of a plaster jacket immediately after the operation and proved entirely satisfactory. The patient breathed and moved more comfortably than is usual in a plaster of paris jacket. The spinous processes of the 12th dorsal and the 1st and 2nd lumbar vertebrae were resected and retained for use as bone chips. As all the ligaments were ossified, the spinal column was a complete bony tube. The ligamentum flavum between the first and second lumbar segments had to be penetrated by gouge and mallet. The gap was enlarged, and spikes were passed obliquely upwards and outwards on both sides into the intervertebral foramina. These acted as directors, and wedge osteotomy was performed at an angle of 45 degrees. The table was then slowly straightened, so that the anterior common ligament was torn. Since this did not provide sufficient straightening, the osteotomy was repeated between the vertebrae immediately above, and by further raising the table, an added 10 degrees of straightening was achieved. The posterior surfaces of the laminae and pedicles were roughened by an osteotome, and the diced spinous processes were packed on the raw surfaces. After suture of the muscles and skin, the malleable brace was fitted. The patient was left with a slight stoop. The author feels that early diagnosis and adequate splinting would prevent deformity in ankylosing spondylitis. Furthermore, in many cases, x-ray therapy and hormones may limit the extent of the ankylosis, and it is possible that cortisone may be helpful in the early stages. Once bony ankylosis has occurred, however, surgical treatment is required.

Thorax, London

7:205-284 (Sept.) 1952

Cardiac Arrest and Ventricular Fibrillation: Method of Treatment by Electrical Shock. I. K. R. McMillan, F. B. Cockett and P. Styles. —p. 205.
Study of Pathology and Pathogenesis of Bronchiectasis. F. Whitwell. —p. 213.
*Carcinoma of Middle Lobe. P. E. Baldry.—p. 240.
Abnormal Disposition of Pulmonary Veins. H. Butler.—p. 249.
Effect of Rate of Breathing on Maximum Breathing Capacity Determined with New Spirometer. L. Bernstein, J. L. D'Silva and D. Mendel. —p. 255.
Case of Thrombus in Left Auricle Simulating Mitral Stenosis. E. M. Nanson and R. M. Walker.—p. 263.
Case of Bilateral Parasternal Diaphragmatic Hernia. R. W. Brown. —p. 266.
Blood Supply of the Lung in Pulmonary Tuberculosis. L. Duckowicz. —p. 270.

Carcinoma of Middle Lobe.—In recent years much emphasis has been placed on the syndrome produced by collapse and inflammatory changes in the middle lobe secondary to stenosis of its bronchus by pressure or by erosion by infected hilar lymph nodes. Although this is the common cause of the "middle lobe syndrome," carcinoma may arise from the middle lobe bronchus and cause a similar clinical picture. Nine cases of carcinoma

arising from the middle lobe bronchus were treated by resection at the hospital with which the author is connected in the five year period 1946 to 1951. These cases are described, and the manner in which they simulated those due to other disease processes, including lung abscess, interlobar empyema, and postinfective bronchostenosis, is discussed. They constituted 5% of the total number of 185 cases of bronchial carcinoma treated by resection during the same period.

Tidskrift for Den Norske Laegeforening, Oslo

72:583-610 (Sept. 15) 1952. **Partial Index**

*Encephalitic Poliomyelitis. L. Emblem and B. N. Hauge.—p. 588.
*Follow-Up of Patients Admitted for Poliomyelitis but Discharged with Other Diagnoses and of Patients with Nonparalytic Poliomyelitis. K. Ytrehus.—p. 589.
Typhoid Treated with Chloramphenicol. E. Farbrot.—p. 592.

Encephalitic Poliomyelitis.—Four cases of poliomyelitis with mainly cerebral localization in patients aged 4, 6, 9 and 16 respectively, were seen in 225 cases of poliomyelitis treated in Drammen Hospital in 1951. Two cases showed pure encephalitis, with no evidence of other than poliomyelitic origin, in one case there was a slight paralysis in the lower extremities, and one case represented a bulboencephalitic picture. The characteristic clinical syndrome in all appeared when paralysis is usually manifested in the bulbospinal form and consisted of somnolence or stupor, visual hallucinations, restlessness followed by extrapyramidal motor inactivity, mutism, and finally rapid and complete restitution.

Follow-Up of Patients Admitted for Poliomyelitis.—Ytrehus calls attention to the need of a longer observation period of patients with vague febrile conditions during a poliomyelitis epidemic, even though the spinal fluid is normal. In 63 such patients admitted to Drammen Hospital during the 1951 poliomyelitis epidemic under the diagnosis of poliomyelitis other diagnoses were made after a few days' observation. Follow-up examination revealed that at least six of these patients had poliomyelitis. Follow-up of 67 patients with poliomyelitis discharged as aparalytic revealed development of paralysis in 6 cases.

Tubercle, London

33:287-320 (Oct.) 1952

Thoracoscopy and Resulting Artificial Pneumothorax: Review of 442 Examinations on 301 Cases. H. B. Wright.—p. 288.
Haemagglutination Reaction in Relation to Management of Pulmonary Tuberculosis: Report by Research Committee of British Tuberculosis Association.—p. 297.
Treatment of Experimental Tuberculosis with Hyperthermia and Streptomycin. J. Marks.—p. 303.
Post-Pleuritic Pulmonary Tuberculosis: Development and Fate of Incipient Lesion. B. C. Thompson.—p. 305.
Plea for Conservative Treatment in Pulmonary Tuberculosis. L. Dunner and M. S. Hicks.—p. 308.
Mediastinal Emphysema. R. C. Cohen.—p. 312.

Ugeskrift for Laeger, Copenhagen

114:1277-1312 (Sept. 18) 1952. **Partial Index**

*Ambulant Treatment of Bronchial Asthma with Corticotropin. E. Andersson.—p. 1284.
Surgical Hand Washing With and Without Brush. E. Thomsen.—p. 1291.

Ambulatory Treatment of Bronchial Asthma with Corticotropin.—Thirteen patients with a history of severe bronchial asthma for from 6 months to 19 years were treated on an ambulatory basis with corticotropin for six days, receiving 50 mg. twice daily the first two days and 30 mg. twice daily the next four days. Earlier methods of treatment had been unavailing. The Thorn test made two weeks before the start of treatment was positive in all cases. Patients with diseases considered contraindications to use of corticotropin were excluded. Improvement began from 24 to 48 hours after the first injection. The subjective symptoms disappeared in 11 cases, and moderate improvement occurred in 2 cases. There were no grave complications during the administration of corticotropin. Slight colds developed in six cases but did not affect the asthma. The remission lasted from 1 to 67 days. In one instance status asthmaticus developed the day after treatment ended. Andersson stresses that corticotropin should be used only in severe cases when other therapy is without effect.

Zentralblatt für Chirurgie, Leipzig

77:1529-1560 (No. 36) 1952. **Partial Index**

Operability of Malignant Renal Tumors. W. Stotz.—p. 1535.
Surgical Treatment of Cervical Nerve Roots. H. Junge.—p. 1539.
*Medullary Nailing and Fat Embolism. W. Schüttemeyer.—p. 1547.
Pathogenesis of Myositis Ossificans. H. J. Hoppe.—p. 1552.

Medullary Nailing and Fat Embolism.—When Küntscher first introduced medullary nailing, the dangers of infection, impairment of the blood-forming organs, and fat embolism were emphasized. Extensive experience and follow-up examination proved the first two of these possible dangers as slight and not more likely to occur in this than in any other method of fracture treatment. The danger of fat embolism in medullary nailing was difficult to ascertain, because of the lack of a reliable method. Reasoning that the presence of fat in the blood would elicit certain fermentative processes, efforts were made to ascertain the specificity of certain enzymatic reactions for the diagnosis of fat embolism. The lipases being the fat-splitting ferments, the saponifying capacity of lipase was measured by means of a tributyrin solution. The glycerin esters developing during this process increase the surface tension of the reactive solution, which is ascertained by means of a stalagmometer; the lower the number of drops, the greater is the surface tension. After the reliability of this stalagmometer determination of an increase in the lipase content of the serum had been verified by animal experiments and in the course of necropsies after deaths in accidents, this test was employed in 468 patients receiving treatment for fractures or undergoing operations on the bones. Particular attention was given to 108 patients in whom medullary nailing was done for fractures of long tubular bones, either within the first 24 hours after the fracture, or three days or later after the trauma. It was found that medullary nailing may cause or intensify fat embolism. Nailing within 24 hours involves greater danger of fat embolism than does nailing three days or longer after the fracture. Advanced age, operations on atrophic bones, and faults in the technique of nailing further intensify the danger. If tests disclose a high lipase content of the serum after fracture, early nailing should not be done. In patients over 40 nailing should also be done at a later date. In open fractures, however, the danger of fat embolism after early nailing is slight. Prolonged attempts at reduction and forced introduction of nails should be avoided. In such cases it would be better to expose the fracture.

Zentralblatt für Gynäkologie, Leipzig

74:1409-1440 (No. 36) 1952. **Partial Index**

Is the "Wider Indication" for Cesarean Operation Always Justified? H. Küstner.—p. 1422.
Pelvic Presentation and Cesarean Section. E. Kraussold.—p. 1425.
*Spontaneous Delivery After Cesarean Section. W. Pierrot.—p. 1430.
The Fate of Children Delivered by Cesarean Section, and Capacity for Breast Feeding After Cesarean Section. L. Umland.—p. 1434.

Spontaneous Delivery After Cesarean Section.—In a total of 8,566 obstetrical deliveries occurring at the women's clinic in Halle from 1942 to 1952 there were 91 vaginal deliveries in 71 women who previously had been subjected to cesarean sections. Of these 91 deliveries 76 were spontaneous, with the infant in cranial presentation; 6 were forceps deliveries from cranial presentation; 4 were extractions with manual aid from pelvic presentation; and in 5 version was done. The indications for which the cesarean operation had been done previously are listed and discussed. The old surgical scar never ruptured, not even when there were repeated births after a cesarean operation. Disturbances in the course of deliveries were observed only during the third stage of labor. The author concludes that in deliveries after a previous cesarean operation an expectant attitude may be assumed, even in many cases of slight degrees of contracted pelvis. Because of possible scar defects and the greater tendency of disturbances during the third stage of labor, however, these women should always be delivered in a hospital.

BOOK REVIEWS

Operative Neurosurgery with Emphasis on Procedures in Trauma. By Elisha Stephens Gurdjian, M.D., Professor of Neurosurgery, Wayne University College of Medicine, Detroit, and John E. Webster, M.D., Assistant Professor of Surgery, Wayne University College of Medicine. Cloth. $10. Pp. 422, with 129 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1952.

In this book the authors present the surgical techniques that they have found useful for dealing with neurological lesions. In the main their methods are standard and similar to or identical with those used in most neurosurgical clinics throughout this country. In addition to the description of technical procedures, there is a brief historical background of the various neurosurgical procedures that are discussed and a limited discussion of the nature and symptomatology of the conditions dealt with. The illustrations, which have all been specially prepared for this book, are somewhat unusual. They are most attractive and for the most part very illustrative of the authors' methods. A few are so diagrammatic and have such an impressionistic flavor that they are somewhat obscure.

There are a few points to which attention should be called. Most neurosurgeons would not agree that spinal punctures are as entirely free from danger as these authors imply. In the illustration on page 29 the frontal operculum is mislabeled "Island of Reil" and the thalamus is not clearly designated. One wonders what the authors mean on page 32 by "ventricular spinal fluid." Removal of the wall of the cystic cavity associated with a cerebellar astrocytoma is very seldom necessary or desirable (page 133). A midline incision, as described on page 146, is a poor one for exposing the ninth cranial nerve for intracranial section. Most neurosurgeons would not agree with the authors that an incision 1½ in. in front of the ear is preferable for the temporal exposure of the trigeminal nerve. An incision closer to the ear makes for a much simpler operation. On page 286 attention has not been called to the importance of dividing the first dentate ligament in order to expose the motor root of the first cervical segment, as pointed out by McKenzie. These, however, are all minor criticisms. The book is well done and attractive. It will prove useful to many young neurosurgeons and residents in training. There is a very full bibliography and a useful index.

The Mentally Retarded Child: A Guide for Parents. By Abraham Levinson, M.D., Professor of Pediatrics, Northwestern University Medical School, Chicago. Prepared under auspices of Dr. Julian D. Levinson Research Foundation. Cloth. $2.75. Pp. 190. The John Day Company, Inc., 62 W. 45th St., New York 36, 1952.

One of the most difficult problems in medical practice is how to guide the parents of the mentally retarded child. The parents are usually confused and bewildered. They want to know the nature of their child's trouble and what to do about it; they want a treatment and management program. Physicians interested in mental retardation have felt for a long time the need of a book on mental retardation for parents. This wish has been fulfilled with the publication of this book. The author is an authority in the field of pediatric neurology and has made a thorough study of mental retardation in children. He is the director of the Dr. Julian D. Levinson Research Foundation, established in the memory of his son, a brilliant young pediatric neurologist who died at the age of 27. The foundation is devoted to the clinical and scientific study of mental retardation.

The book explains in simple language the various medical and educational phases of mental retardation. There are chapters on diagnosis, on early recognition, on the causes of mental retardation, on prevention, and on treatment. There are also chapters on education of the retarded child, on vocational training and guidance, and on teamwork among the physician, psychologist, teacher, and social worker. There is a chapter on community and state responsibility and on research. Above all, there are two chapters devoted to parents themselves, advising them how to meet their problems, medically and psychologically. The first thing the author advises the parents to do is to get medical advice early and to follow the program outlined. Of great importance are the questions and answers, which supply answers to some of the most important questions asked by parents. A very useful feature of the book is a list of schools and institutions for the mentally retarded child, which will save the physician untold time and energy in looking for a school suitable to his patient's need.

Although the book was written primarily as a guide for parents, it should be read with great interest by all physicians. The book is an important contribution to medical literature. It is written in simple but beautiful style and should be a part of every physician's library.

Laboratory Technique in Biology and Medicine. By E. V. Cowdry, Research Professor of Anatomy and Director, Wernse Cancer Research Laboratory, Washington University, St. Louis. Third edition. Cloth. $4. Pp. 382. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1952.

The title of this book may at first be misleading for the technician in a hospital laboratory because it would imply a coverage of laboratory procedures in the various divisions of the hospital laboratory. Actually, this text describes laboratory procedures essentially in histology and histochemistry. There is a discussion on the use of the electron microscope; the importance of this apparatus is now manifested in its use in more than 300 laboratories. The phase microscope, microchemistry, enzyme studies, and the separation and composition of various cellular elements are reviewed. The techniques for the use of the various equipment and the accepted methods in histological staining techniques receive the major emphasis.

Dr. Cowdry's book is arranged in alphabetical order. In fact, this is an encyclopedia of microscopic technique and not a pedantic outline for histological staining methods. There are references to the literature in practically all of the procedures described, so that the reader may, if he desires, obtain a more detailed description, analysis, and interpretation of the various techniques described in the text. For the experienced technician, Cowdry's book is a very handy reference, but for the casual and inexperienced worker, this text may require additional guidance from someone with experience. An example of a description not clear enough for the inexperienced person to follow is that of the method for mitochondrial stains.

The original title for the first edition was "Microscopic Technique in Biology and Medicine." Probably the original title of the book emphasized the nature of the text better than the present one. In spite of the shortcomings mentioned, this book can be recommended to the pathologist, research worker, and technicians interested in the technique of cytology, chemistry, and biology of the cell.

Diabetic Glomerulosclerosis: The Specific Renal Disease of Diabetes Mellitus. By Harold Rifkin, M.D., F.A.C.P., Lecturer in Medicine, College of Physicians and Surgeons, Columbia University, New York, Louis Leiter, M.D., Ph.D., Clinical Professor of Medicine, College of Physicians and Surgeons, Columbia University, and James Berkman, M.D., Instructor in Pathology, College of Physicians and Surgeons, Columbia University. Publication number 130, American Lecture Series, monograph in American Lectures in Metabolism. Edited by Paul György, M.D., Louis Leiter, M.D., and S. O. Waife, M.D. Cloth. $3.50. Pp. 102, with 13 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1952.

This is a concisely written monograph on the Kimmelstiel-Wilson syndrome, or the "intercapillary glomerulosclerosis" of diabetes mellitus. The clinical syndrome, pathological physiology, differential diagnosis, and management of the condition are discussed adequately for the general practitioner, and the gaps in our knowledge of prophylaxis are also considered. It is a worthwhile addition to the library of any physician treating diabetic patients.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Lung Abscess. By R. C. Brock, M.S., F.R.C.S., F.A.C.S., Thoracic Surgeon to Guy's Hospital, London. Cloth. $7.75. Pp. 197, with 60 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1952.

In this monograph the author presents the surgical profession with a contribution of the first rank, which consolidates his own conclusions based on patients treated over a period of 20 years. Mr. Brock is thoracic surgeon to the Guy's Hospital and to the Brompton Hospital for consumption and chest diseases, in London.

Thoracic surgeons and pathologists are well aware that the literature on abscess of the lung is voluminous, containing considerable disagreement, even confusion, on matters of etiology and treatment. The author has made a conscientious effort to shape a greater order from this state of affairs. His own series, which he analyzes in numerous tables, consists of 477 cases (1933-1950), including 394 of nonmalignant disease, and 83 of malignant disease. Collating the important material from the literature with his own data, he states basic principles and advances conclusions and a rationale of treatment. The result is a lasting contribution, at once fundamental, comparative, and original.

The main principles presented are: 1. Lung abscess is not a clinical entity but a group of different types of lesions with varying etiology. 2. A complete diagnosis must not stop at "lung abscess" but must always seek the true primary cause. 3. This condition is grave, despite the wide reliance on conservative therapy. 4. The commonest mechanism in the production of lung abscess is a bronchial embolism due to some substance that is carrying organisms. These are often mixed and of the types found in the mouth and nasal passages.

The text is divided into nine chapters, of which the first four present the fundamentals of fetid and nonfetid abscesses. This includes anatomy and anatomic nomenclature, pathology, etiological classification, and clinical and radiological features. An important point is the insistence on lateral radiographs to locate lesions and clear up misconceptions about hilar abscesses. Two further chapters demonstrate the author's thesis by separately presenting two conditions approaching distinct clinical entities, i. e., abscesses due to staphylococci and Friedländer's bacilli. A comprehensive chapter on etiology is followed by another on carcinoma as an etiological factor. The final chapter, on treatment, may well be of greatest interest to the surgeon, with its discussion of expectant versus operative management.

It is seen that the author makes the etiological problems central to his discussion. He emphasizes the etiological importance of tonsillectomies, dental extractions, and dental sepsis, since infected material may be inhaled during sleep, narcosis, or anesthesia. Furthermore, the affected lung segment can be shown to depend on posture and gravity, which thus supply an important principle for diagnosis. It is Brock's opinion that many abscesses labelled "idiopathic" are actually traceable to dental sepsis. This concept, together with a concise analysis of the patient's posture during and after operation, are outstanding contributions toward the recognition of the true primary cause of various types of abscess.

In his chapter on therapeutics, the author points out that treatment of an abscess is essentially surgical, even when nonoperative. The surgeon is thus properly concerned with the modern outlook for nonoperative (expectant) management, so radically altered by modern chemotherapeutic and antibiotic agents. Methods of postural drainage and bronchoscopy are also discussed. Of course, the indications for operation are crucial in the discussion, and the author's presentation is notable for his grasp of previous reports and the lucidity of his own conclusions. From his own experience he denies that nonfetid abscesses have a greater tendency toward spontaneous resolution than the fetid type. He holds that operation for abscess is indicated whenever the patient fails to improve in every one of three respects: (1) general illness, (2) production of pus, and (3) radiological picture.

The technique of external drainage and its aftercare are described in some detail, with the suggestion that the antibiotics have reduced the mortality and morbidity of this procedure. In a final comparison between expectant and operative management, the author points out the modern trend away from long-drawn-out expectant management when the patient is not improving and toward one-stage lobectomy. This discussion is documented with well-chosen case reports, citations, and comparative tables of results. A list of references provides a short but valuable selection from the literature of the period 1925-1948.

The Advance to Social Medicine. By René Sand, Professor of Social Medicine, University of Brussels. Cloth. $8.50. Pp. 655. Staples Press, Ltd., Staples House, 83 Great Titchfield St., London, W.1; 70 E. 45th St., New York 17, 1952.

This is a most interesting book. It has nine chapters, beginning with the history of the medical profession, which is followed by the history of hospitals, of personal hygiene, of public health, of social hygiene, of industrial medicine, of social assistance, of the studies of man, and the advent of social medicine. The author points out that the origin of the medical profession is not in the empirical healers of far-off times but in the true medical profession established 5,000 years ago in Egypt and Babylon and later in India and China. The first physicians ranked with the scientists, scholars, and counselors of the king.

Greek medical science made its appearance six centuries before Christ. Public physicians were available to all citizens, but other physicians enjoyed the privilege of private practice. The development of medicine is traced through the period of the Roman Empire, the Moslem period, the Middle Ages, and up to the present time. Attention is paid to the development of other sciences and the role they have played in increasing the knowledge and efficiency of medicine. It is interesting to note that the hospital as we know it today had its origin in Rome. A temple of Aesculapius was established in 293 B. C. on an island in the Tiber River; this temple became the refuge of the poor, where, in time of sickness, they had the care of physicians and nurses. From that point on, the development of the hospital is followed with skill and attention to interesting details. Military and special hospitals are thoroughly discussed, with interesting information in regard to the development of social service included in this section.

The history of personal hygiene is thoroughly considered, beginning with primitive man and ending with the various types of hygiene known today. Public health is handled in a masterful way from earliest times to today. The author points out that disease occurred before the appearance of man, a fact that is evidenced by skeletons of dinosaurs and giant reptiles of millions of years ago. He mentions that Susruta of India, during the first century after Christ, believed malaria was caused by insect stings. This chapter ends with the period during which Pasteur lived. Social hygiene in all its aspects is thoroughly considered from its earliest beginning to the present time. Poverty, crime, disease, old age, alcoholism, and habit-forming drugs are considered. The importance of proper statistics was recognized early. The chapter on industrial medicine takes the reader back to Hippocrates and traces the development of our knowledge through Ramazzini, the real founder of industrial medicine, and through the growth of this specialty up to the present time.

The chapter on social assistance goes back to the early times of the tribe, clan, and village, where the needy were helped and hospitality was recognized as a virtue. The Christian doctrine emphasized this virtue. Progress through the centuries did much to further our knowledge of social assistance, and now we realize the importance of endeavoring to remove the causes of misfortune. The chapter takes the reader through the Middle Ages up to the present time of complete rehabilitation with vocational guidance, training, and resettlement. The eighth chapter takes the reader through the history of the study of man. Statistics, demography, anthropometry, biotypology, psychology, sociology, genetics, eugenics, education, criminology, and penology are all thoroughly considered.

The final chapter takes the reader through different countries and points out what has been accomplished in each. The author states on page 563: "So long as the doctor remains true to the Hippocratic tradition, and takes no account of his patients' occupation or social condition, he is practicing pure clinical medicine; once he begins to worry about the occupational, economic and domestic element, he's using social medicine." This book can be recommended to medical students for collateral reading and to the student of sociology. Any physician, however, will find the book of great interest.

Intracranial Aneurysms. By Wallace B. Hamby, M.D., Professor of Neurological Surgery, University of Buffalo, School of Medicine and Dentistry, Buffalo, New York. Cloth. $14.25. Pp. 564, with 104 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1952.

The rapid development of information regarding intracranial aneurysms in the last 30 years justifies a monograph entirely devoted to one of the most trying forms of vascular disease. As treatment has now become largely surgical, it is fitting that a book on this subject be written by a neurosurgeon. The author, having studied nearly 50 patients with aneurysms about the circle of Willis, is fully competent to discuss the subject. In his well-written book he covers adequately the subject of the cerebral circulation, outlines the steps leading up to a diagnosis of intracranial aneurysm, and describes in detail the intact, the ruptured, and the arteriovenous types. The literature is fully reviewed, including references to work published in 1951, and there is an excellent index. The numerous illustrations are clear and informative.

This book, so well organized and produced, is a natural sequence to the historical development of the subject. Although a diagnosis of intracranial aneurysm was occasionally made in the last half of the 19th century, as in the case described by Jonathan Hutchinson in 1875, it was not until 1920, when C. P. Symonds was visiting Harvey Cushing's Clinic in Boston, that the modern investigation of the problem was inaugurated. At Cushing's suggestion Symonds published a review and report in 1923, and, using a parallel series of cases, Sosman and Vogt described the roentgenologic appearance of aneurysms of the internal carotid artery and the circle of Willis in 1926. Geoffrey Jefferson noted the visual field defects as a major localizing sign, and the cavernous sinus syndrome gradually came to be recognized. Cerebral angiography, now the principal form of diagnosis, was introduced by Moniz in 1927 and competently discussed by Moniz's neurosurgical associate, Lima, in 1950.

Once the diagnosis is made and the lesion localized by angiograms, surgical treatment should be considered. The greatest hazard lies in the possibility of rupture of the aneurysm during its exposure. This led the author to measures of temporary occlusion, which other surgeons have adopted. The treatment by surgical methods of intracranial aneurysm, in spite of all the precautions used, is so dangerous that up to recently a 50% operative mortality was expected. The death rate was as great as that for spontaneous subarachnoid hemorrhage itself. Slowly the rate is being reduced. Poppen reported in 1951 that he had subjected 18 patients to intracranial trapping operations, with only one operative death. Multiple, bilateral aneurysms and those that arise from the bifurcations still offer the most formidable hazard to surgery.

A Manual for Psychiatric Case Study. By Karl A. Menninger, M.D. Menninger Clinic monograph series no. 8. Cloth. $6.75. Pp. 355. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1952.

This latest work of Dr. Menninger is distinctly unique. For the first time there have been brought together into an integrated whole the how and why of obtaining, recording, and evaluating the basic observations necessary for the management of patients suffering from mental illness. The sources for this information include a survey of the pertinent literature combined with vast clinical experience of the Menninger Clinic.

The basic philosophy of the text is expressed as follows: "History is not a chaotic assemblage of facts but an orderly sequence of events. Clinical history should always tend to be a life history, a disease being the final result of all the factors which modelled this life," and finally: "It is not the history of the disease which leads to an understanding of the life history but the latter which may induce an understanding of the former." The text then proceeds to explain vividly and to illustrate what this means, in nontechnical terms and in relation to everyday problems that confront a physician.

The first 175 pages comprise (1) the approach to the psychiatric patient, (2) the collection and recording of historical data, (3) the collection and recording of examination data, (4) the analysis of the collected data, and (5) the treatment records. The last 175 pages are taken up almost entirely with the recording of four illustrative case records. These records are especially helpful in demonstrating more fully the main points that are stressed in the first half of the book.

At the present time this manual is an excellent model urgently needed by all residents and fellows in psychiatric training. It should be most useful to medical students who are interested in their patients as persons. For the general practitioner, it not only presents many important "do's and don't's" that are applicable to any medical situation but also discusses most ably the preparation of a patient for psychiatric referral. In addition, it clarifies the concept of what psychiatrists do. There is no discussion, however, of therapy per se. Of necessity this has been left to be covered in a future manual.

It would be helpful if psychiatrists also would read this book. Even though they may know most of the basic information, it may inspire them to make further contributions or corrections that the author would surely welcome. The main criticism to be made here regards the chapter on diagnostic synthesis, which seems to be oversimplified, stereotyped, and outdated in the light of current psychodynamic knowledge. Any improvement in this direction, however, will be a most difficult task, and one that has apparently never been tackled. Finally, Dr. Menninger maintains his usual excellent style of writing, so that interest is sustained in the reading.

The Extra Pharmacopœia (Martindale) Incorporating Squire's Companion in Two Volumes. Volume I. Published by direction of Council of Pharmaceutical Society of Great Britain. Twenty-third edition. Cloth. 55s. Pp. 1352. Pharmaceutical Press, 17 Bloomsbury Sq., London, W.C.1, 1952.

This historic work, published under the auspices of the Pharmaceutical Society of Great Britain, is for physicians, pharmacists, and analysts. Because it naturally emphasizes the drugs, household chemicals, and insecticides used in Great Britain and her possessions, the book is not used so widely in the United States as it deserves to be.

As in the past, the text is based on the latest editions of the pharmacopeias of the chief nations of the world and on the formularies of a number of English hospitals. The general plan of the work also is unchanged. It chiefly consists of monographs containing information on composition, solubilities and incompatibilities, toxic effects, antidotes, uses and contraindications, dosages, and names and manufacturers of proprietary preparations containing the substance. Preparations manufactured in the United States are included under the last heading. In many cases abstracts are given of articles that show how the drug should be used; these abstracts are mostly from the last decade's medical literature. Progress in medicine during the past 13 years is reflected in the number of new monographs included and in the new or extensively revised special sections on antibiotics, antiserums, toxoids, tuberculins, vaccines, blood transfusion, and ligatures and sutures. There is a therapeutic and pharmacological index besides the regular subject index. By the use of lightweight paper, printing the abstracts in 6-point type, and by using a fairly large type area on the page, the book has been kept to a manageable size. The binding is sturdy.

Wounds of the Extremities in Military Surgery. By Oscar P. Hampton Jr., M.D., F.A.C.S., Instructor in Clinical Orthopedic Surgery, Washington University, School of Medicine, St. Louis. Cloth. $10. Pp. 434, with 131 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

The medical profession will welcome this work, which fills a distinct gap in present-day medical literature. For the first time, some of the special problems of military surgery are assembled together in a readable and intelligible form. The format of the volume is satisfactory, the printing legible, and the illustrations generally clear and descriptive. The advice tendered throughout the book is, on the whole, sound. There is, however, a rather inadequate treatment of shock, a complete lack of reference to intra-arterial transfusion, and a very limited section on burns. It is difficult to agree with the author, in the section on amputations, that the guillotine procedure has any advantages over the open-flap method as outlined by Charnley and Jack in 1943. The method is, however, the one that was adopted by the American Army, and the author does include a valuable discussion on other methods of amputation. This volume is one that will frequently be consulted by all engaged in military surgery and should also be of constant use to surgeons who have to deal with industrial and road accidents.

QUERIES AND MINOR NOTES

TESTS FOR ADRENAL CORTICAL FUNCTION

TO THE EDITOR:—*Please describe the most reliable eosinophil count test for adrenal cortical function.*

M.D., Maryland.

ANSWER.—Two types of corticotropin tests for adrenal cortical function are recommended. The first is the four hour test, in which 25 I. U. of purified corticotropin is injected intramuscularly and the number of circulating eosinophils determined by direct count immediately before and four hours after corticotropin administration. The test is preferably performed in the afternoon; patients should not fast. This is a rapid screening test only. An eosinophil fall of greater than 50% makes the diagnosis of adrenal insufficiency unlikely; an inadequate response, however, cannot be accepted as conclusive proof of adrenal cortical failure.

The second test is the intravenous corticotropin test. Definitive proof of the status of adrenal cortical secretion requires maximal and prolonged adrenal stimulation. This may be produced by the infusion of 25 I. U. of corticotropin dissolved in isotonic sodium chloride solution, during an eight hour period. Direct eosinophil counts are done immediately prior to and at the completion of infusion of corticotropin. A more complete evaluation is achieved by measuring the 24 hour urinary excretion of 17-ketosteroids and/or 11, 17-oxysteroids before and during corticotropin administration. An eosinophil fall of 85% or greater and a steroid rise of at least 3 to 5 mg. per 24 hours are considered normal. It is to be emphasized that, in patients receiving cortisone therapy, repeated daily infusions may be necessary to overcome pituitary-adrenal inhibition; three successive days of corticotropin infusions will ordinarily suffice. Sensitization reactions to corticotropin are extremely uncommon and have been encountered only in patients with an inadequate adrenal cortical response. Treatment consists of the immediate administration of epinephrine and a suitable antihistaminic agent.

CLOTS IN THE MENSTRUAL FLOW

TO THE EDITOR:—*If it is true, as stated in textbooks of obstetrics and gynecology, that menstrual blood does not clot, can one assume that in young women with delayed or irregular menstrual periods followed by bleeding and passing of large clots the patient is having a miscarriage rather than a resumption of menses?* *John D. Marshall, M.D., Portland, Ore.*

ANSWER.—There is some agreement that, under normal circumstances, menstrual (true menstruation) blood does not clot when passed into the vagina. It is now believed that as the end arteries of the endometrium go into spasm, leading to necrosis of the superficial layers, blood extravasates into the tissue spaces and clots in minute particles. Then, it is believed, an enzyme liquefies the blood, and it passes into the vagina in this form. Space does not permit a long discussion of the proof of these things, but much work has been done on this problem. The presence of clots in menstrual flow probably means only that the bleeding is occurring at such an accelerated rate that either there is no time for liquefaction or the enzyme is not present in sufficient quantities to liquefy the larger proportion of blood. It is not correct, therefore, to assume that patients who miss periods and resume bleeding with clots are aborting. Some, no doubt, are pregnant, but better proof is needed. Clots sometimes are due to various pathological conditions: follicular or corpus luteum cysts, pelvic inflammatory disease, or tubal abortion, and some, for want of a specific cause, are considered the result of what is called functional uterine bleeding.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

EPILEPSY

TO THE EDITOR:—*In the offspring of epileptics at what age is it possible to obtain an electroencephalographic pattern suggestive of epilepsy? Can this be used to predict the likelihood of the onset of seizures, and, if so, at what age would such a tracing be of value? What hormones are being used for treatment at present? Are patients with psychomotor epilepsy more responsive to this therapy than those with other types?*

M.D., Connecticut.

ANSWER.—Abnormality of the electroencephalogram may be observed at any time from birth onward; however, an observed abnormality may not be predictive of epilepsy, and epilepsy may be acquired rather than genetic in origin. The pattern most likely to denote a genetic origin is a generalized, three per second, alternate dart and dome (Lennox, W. G.: *J. A. M. A.* **146:**529-536 [June 9] 1951). This is rarely observed before the age of 5, and it occurred in 8% of the patients in Gibbs' series (Atlas of Electroencephalography, vol. 2, Cambridge, Mass., Addison-Wesley Press, 1952). Hormone therapy is logical for individual patients who have evidence of deficiency of a specific hormone. Reports of the use of cortisone or corticotropin (ACTH) have been too inconclusive to warrant more than experimental use of these substances. Psychomotor seizures have not been especially helped by them.

EXTERMINATION OF TICKS FROM AN APARTMENT

TO THE EDITOR:—*A woman, her son, her 10-month-old baby, and a dog live in a ground floor apartment that is infested with ticks. Last year, the dog had some ticks and may have brought them into the apartment, but he has not had any in a year. Kindly recommend a method that would be harmless to the baby and dog for exterminating the ticks and preventing infestation.* *M.D., New York.*

ANSWER.—If the brown dog tick is the pest, as the situation suggests, the family dog must be regarded as infested and eradication measures directed against the infestations of both the dog and the premises. Under the circumstances described, gradual elimination of the pests can be achieved safely by applying a solution of 5% chlorophenothane (DDT) in refined kerosene to cracks and behind baseboards. The solution can be allowed to drip from a paint brush and the excess wiped up with a cloth. The premises should be treated as thoroughly as possible with due regard to keeping the baby from contact with the residual insecticide. The dog may be sparingly treated with about a teaspoonful of 10% chlorophenothane powder, working the material well into the coat. The animal should be thoroughly brushed after the application. As an alternative, the dog may be washed with a suspension of 2 oz. of derris root or cube powder of 3 to 5% rotenone content in a gallon of warm, soapy water. The rotenone wash should be repeated at intervals of three or four days for a month or more. Chlorophenothane applications to the dog and to the premises need not be repeated unless live ticks are found after a lapse of three or four weeks.

DRY AIR IN THE HOME

TO THE EDITOR:—*Is it important from a health standpoint to increase the humidity in a room during cold weather?*

David Kaplan, M.D., Elmira, N. Y.

ANSWER.—There is no conclusive evidence to show that artificial humidification during cold weather is important to the health of normal persons. There are, however, a few persons who seem to be unusually sensitive to low humidities. Although the tendency toward dryness of the nose and throat may produce an unpleasant sensation in such persons, most of the mischief attributed to dry air is fictitious.

NARCOTIC DRUGS

TO THE EDITOR:—*In what way (that is, in terms of enzymology and biochemistry on a cellular level), do narcotic drugs exert their effects? In other words, what do these compounds do to the body? What does the body do to narcotic drugs? Are they digested and metabolized?*

Albert Schatz, M.D., Bucks County, Pa.

ANSWER.—It is assumed that the questions refer to the analgesic narcotic drugs (morphine, meperidine, and methadone) and not to the hypnotics (e. g., barbiturates and chloral hydrate). Although a considerable body of literature on the effects of these agents on the enzymatic activities of various tissues exist, the data available do not adequately explain the pharmacological actions of any of the analgesic drugs. In general, the concentrations of drugs required to produce definite effects on cellular metabolism far exceed those that could be obtained with therapeutic doses of any of the analgesics, and such effects as are observed (such as decrease in oxygen uptake, inhibition of the succinoxidase system, inhibitions of oxidative phosphorylation, and inhibition of acetylcholinesterase) can be induced by a wide variety of agents that have very different pharmacological actions. The known changes in cellular metabolism induced by these drugs are, therefore, not specific.

The drugs are metabolized in the body and excreted via the urine and other routes. Morphine is excreted in the urine, both as "free" or unchanged morphine and in a conjugated form. Although the conjugated compound has never been isolated and identified chemically, it seems probable that it is morphine glucuronate and that the site of conjugation is in the liver. Meperidine is demethylated and deesterified in the body. Less is known concerning the fate of methadone, but the amounts of this drug excreted as such in urine and feces are quite small.

HERNIA IN AN INFANT

TO THE EDITOR:—*I repaired a right inguinal hernia on a 6-month-old boy. About 24 hours after surgery the testicle was swollen. In a few days the swelling subsided without operative interference. How soon should operative reinterference be done to avoid testicular atrophy? Frequently in these small children the appendix can readily be grasped and removed. Is this considered good surgical procedure?* *M.D., Montana.*

ANSWER.—Testicular swelling immediately following hernia repair may not necessarily be due to the tightness of the external inguinal ring but can be produced by thrombosis within the vascular cord secondary to inadvertent trauma during the operation. Operative reinterference is hazardous and may have no therapeutic value. It is best to await further developments and hope that complete atrophy will not ensue. It should be emphasized that adequate repair of the hernia is not dependent on the snugness of the external ring but is influenced more by adequate high ligation of the hernia sac and proper reconstruction of the floor of the inguinal canal. Concomitant appendectomy must be condemned, despite the accessibility of the appendix. Even a remote risk of contaminating the hernia repair is unjustifiable.

TRICHINOSIS

TO THE EDITOR:—*Can trichinosis be contracted from cured pork products such as bacon and smoked ham if they are eaten raw or inadequately cooked?* *M.D., New York.*

ANSWER.—Pork products, such as smoked ham, that are to be sold for consumption without further treatment should be processed according to regulations specified by the Federal Bureau of Animal Industry. Such products, if prepared in packing houses that are under federal inspection, are stamped "U. S. Inspected and Passed" and should be free from the danger of trichinosis. Products not processed according to federal specification and all raw or nonprocessed pork and pork products (including those stamped "U. S. Inspected and Passed") should be thoroughly cooked or otherwise heated or else previously held at a temperature of 5 F (–15 C) or lower for 20 days or more, to make sure that any trichina larvae that may be present in the meat will be rendered nonviable.

URTICARIA FOLLOWING TETANUS TOXOID

TO THE EDITOR:—*Generalized urticaria occurred 24 hours after the eighth injection of alum-precipitated tetanus toxoid in a 27-year-old white man who received the following injections: 1944, 2 injections, 1 cc. each, 1 month apart; 1948, 2 injections, 1 cc. each, 1 month apart; 1948, 2 injections, 0.5 cc. each, 1 month apart; 1952, Sept. 2, 1 injection, 0.5 cc., and Sept. 30, 1 injection, 0.5 cc. There was no reaction following any of the first seven injections. I plan on skin-testing him after the urticaria subsides. I would be interested in the probability of this being due to the toxoid and what the frequency of such reactions is.*

Walter E. Fleischer, M.D., Middletown, Ohio.

ANSWER.—Although such toxoid reactions as you describe are extremely uncommon it seems likely that the injection you gave was responsible for the urticaria. If a sensitivity test (Moloney) for alum-precipitated toxoid is positive, it may be preferable to use fluid toxoid for a "booster" injection. In either instance, it would seem that 0.2 cc. would be sufficient for the patient discussed.

LOSS OF CORNEAL REFLEX

TO THE EDITOR:—*What is the importance of loss of corneal and pharyngeal reflexes without other physical abnormality (as isolated phenomena)? Kindly discuss this from the organic and functional points of view.*

Edward Dengrove, M.D., Asbury Park, N. J.

ANSWER.—It is difficult to assess the significance of the loss of the corneal and pharyngeal reflexes without other physical abnormalities. According to the textbooks, loss of pharyngeal and such reflexes is associated with hysteria, but this is not always true. Many persons do not have much of a reaction to stimulation to these zones and show no evidence of conversion hysteria. On the other hand many patients with conversion hysteria involving other organs show no implication of these reflexes.

If the word is "reflex" instead of "reflexes," the loss of the corneal reflex would suggest a lesion in the trigeminal nerve distribution, in the ophthalmic division. A loss of the pharyngeal reflex similarly would implicate the ninth and tenth nerves, depending on where the stimulation was placed. Such a loss should cause one to seek along the pathway of the respective cranial nerve.

XANTHOMA PALPEBRARUM

TO THE EDITOR:—*Is there an effective treatment for xanthomata of the eyelids? A 36-year-old nondiabetic woman has extensive xanthomata of upper and lower lids that constitute a cosmetic handicap, despite her attempts to cover them with makeup. An attempt was made to remove these by electrocautery, but this was discontinued when it was found that it was necessary to destroy the entire thickness of the skin to get rid of the xanthoma.* *W. J. Deweese, M.D., Bemidji, Minn.*

ANSWER.—Xanthoma palpebrarum may be destroyed successfully by punctate electrocautery, surgical excision, or the application of monochloracetic acid or trichloracetic acid. All three methods require skill and care.

PENICILLIN

TO THE EDITOR:—*Which schedule for administration of penicillin is preferable: injections of 50,000 units every 3 hours or injections of 200,000 units every 12 hours? There is a refrigerator on the premises. Is it necessary to use ether for disinfection of the skin or is 70% alcohol adequate?*

M. H. Knoch, M.D., Indonesia.

ANSWER.—Seventy per cent alcohol is an adequate disinfectant for the skin prior to intramuscular injection of penicillin. For the treatment of most infections, 200,000 units of penicillin every 12 hours would be preferable to 50,000 units every 3 hours.

ADOPTING A BABY

To the Editor:—*I am writing to take exception to the answer to a query in* The Journal, *Dec. 6, 1952, page 1443. A physician asked how a friend of his should go about adopting a baby. The reply was particularly damaging in the following sentences: ". . . one of the best and usually quickest ways to secure a baby for adoption is to consult local obstetricians or hospitals. In this way, often the background of the baby is better known." Those of us who deal with infertile couples clinically have had ample experience with physician-placements of babies born out of wedlock, and many reports have appeared in the literature by physicians urging that all adoption proceedings be placed in the hands of specially organized adoption agencies. The local obstetrician obviously knows little or nothing about the problems of child adoption, and the hospitals, if they have social service departments, will only in turn refer the couple to an adoption agency anyway.*

I urge you to publish this letter without too much delay to prevent any further catastrophes in child placements by well-meaning but totally unprepared obstetricians. Social welfare agencies who handle adoptions, are, in most instances completely staffed to handle the various problems that arise. With this in mind, the International Fertility Association in conjunction with the American Society for the Study of Sterility has included a special session on the problems of child adoption in the forthcoming First World Congress on Fertility and Sterility (May 25 to 31, 1953).

Abner I. Weisman, M.D.
Associate Secretary-General
International Fertility Association
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To the Editor:—*In* The Journal, *Dec. 6, 1952, page 1443, your answer to a query about "Adopting a Baby" should be corrected or clarified. The third recommendation reads that one of the best and quickest ways to secure a baby for adoption is "to consult local obstetricians or hospitals." This is advocating the very thing that most states are trying to correct. Doctors and ministers are the worst offenders in this harmful method of placing babies, and in many states this practice is illegal. Statistics show that only about half of the adoptions that take place go through recognized court agencies. Adoption agencies make a thorough investigation, which protects both the foster parents and the future security of the infant. How else could the foster parents be assured of a healthy child with the proper background? The meeting of requirements of heritage, race, religion, education, culture, or status, to which both the child and the foster parents are entitled, can be assured in no other way. Fortunately, indiscriminate placing of babies is becoming less frequent as the public becomes educated to proper and legal methods.*

Fred B. Kyger, M.D.
Chief Obstetrician of Fairmount Maternity Hospital
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To the Editor:—*I should like to take exception to the advice given in Queries and Minor Notes in* The Journal, *Dec. 6, 1952, about adopting a baby. You say that "one of the best . . . ways to secure a baby for adoption is to consult local obstetricians or hospitals." This, in my opinion, is wrong. Kosmak* (New York State J. Med. **50**:*2208, 1950*), *Weisman* (New York Med. **7**:*31, 1951*) *and Demuth* (New York Med. **7**:*23, 1950*) *have warned physicians of the grave risks they run by letting themselves be involved in the complexities of the adoption business.*

The adoption of a child, in addition to the medical problem, usually involves genetic, sociological, religious, and legal aspects, and the physician's natural impulse to help relieve hardship and mental anguish does not make him fit to cope with all those questions. Adoption laws are different in various states; in New York a physician may, under certain circumstances, even be legally prosecuted for procuring a baby for adoption (Social Welfare Law of the State of New York, Section 374; Penal Law of the State of New York, Section 487 c). Physicians who, without any selfish motive, become active in securing a baby for adoption, are helping to supply the various "black" and "grey" baby-markets flourishing all over the country. The various aspects of child adoption in the United States were treated in detail by the writers in the Journal of Sex Education (**3**:*70-73, 1950*).

Persons desirous of adopting a baby should by all means be directed to adoption and welfare agencies, not to physicians or hospitals.

Hans Lehfeldt, M.D.
784 Park Avenue
New York 21, N. Y.

To the Editor:—*In* The Journal, *Dec. 6, 1952, is a query regarding adopting a baby. I believe I can contribute something to the answer as published. In the Los Angeles area there are five agencies concerned with adoption of children: (1) Children's Home Society, (2) Adoption Institute, (3) Los Angeles County Bureau of Adoptions, (4) The Holy Family, and (5) Vista Del Mar. These agencies are all concerned with the adoption of children by prospective parents and their purpose is to be of assistance to persons who feel this need. It is my opinion that adoption of babies through these agencies is more likely to bring about a satisfactory adoption relationship that the parents can count on. In large cities babies are frequently delivered by physicians who have little knowledge of the background of either the mother or father when they are unwed parents, and this is especially true of unwed fathers. This statement is contrary to the third part of your answer. It is true that if the foster parents are fortunate, they can adopt a baby more quickly by going directly to an obstetrician, but the results of the survey by the Citizen's Adoption Committee do not indicate this to be the most satisfactory method of adoption. I am certain that if the physician who inquired, or others who are interested, would contact the Department of Social Welfare of the State of California they would be given information that would lead to acceptable adoption proceedings.*

Robert J. McNeil, M.D.
2007 Wilshire Blvd.
Los Angeles 5, Calif.

To the Editor:—*As a clinical psychologist who has for many years been consultant to a state-wide child placing agency in the state of Washington, I was interested in the query and minor note about adopting a baby in* The Journal, *Dec. 6, 1952, p. 1443. The query is a common one, and I feel it deserves a more comprehensive answer. The first and second points of the answer were well taken; however, there is much controversy about what is the best way to secure a baby for adoption and much dissension from the theory that it is through consultation with local obstetricians or hospitals. A child placing agency is equipped with a staff trained in placing children in adoption. Obstetricians are not yet so trained. In addition to having the prospective adoptive baby examined by a pediatrician, it is equally important to have the baby's developmental status determined with the aid of standardized infant intelligence tests.*

The meager statistics available indicate a higher rate of adoption "failures" among nonagency placements than among agency placements. The longer waiting period involved in agency placements is a drawback, but most persons are willing to accept certain limitations to avoid hazards. A couple biologically able to have its own children must accept certain limitations also. It must wait nine months from the time of conception until the baby's birth, and it will take such precautions as are advised by the obstetrician to produce as healthy an infant as possible. Similarly, a couple biologically unable to have its own children should not take short-cuts when considering adoption. If a couple is willing to accept the responsibilities of parenthood, it should be willing to endure a longer wait in order to eliminate some of the hazards of adoption.

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